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PRÆSAGIUM MEDICUM,

OR, THE

Prognoſtick Signs

OF

Acute Diſeaſes;

Eſtabliſhed by

ANTIENT OBSERVATION,

AND

Explain'd by the

Beſt Modern Diſcoveries.

By *JAMES HARVEY*, M. D.

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TO

THOMAS CHAPMAN

OF

Caldecott in the County of *Bucks*, Esq;

SIR,

I *Purposely avoid the usual Strain of* Dedications, *that I may not trouble You with reading the* Character *Your Merit has so justly ob-*

tain'd among those who are happy in your Acquaintance; because your Modesty does not allow it in your most intimate Friends. But, thus I must cross my Inclinations in the most inviting Subject, whilst I have the fairest Occasion of paying that which is due to your Merit, as well as of satisfying in some measure the extream Desire I had to express the Sense I have of your Friendship and Civilities.

The Present I now make You is too mean, and the easiest Return that can be made: But permit me, Sir, to entreat your Acceptance of it, as

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an entire Teſtimony of my true Eſteem for You, tho' it derives its Merit only from the Sincerity of the Offerer, who cannot ask your Approbation without diſcovering his own Ambition. For, as You poſſeſs a great ſhare of the moſt Uſeful and Polite Parts of Learning, ſo you have ſo nice a Taſte and bright a Judgment in the Phyſical Art, *that You never beſtow that Favour but on ſuch as deſerve it.*

But, as this ſmall Treatiſe comes to own your Friendſhip and Civilities, ſo I preſume to hope, that your engaging Tem-

per, and that Goodneſs and Candor that's ſo peculiar and natural to you, will incline you favourably to receive it as it is, being offered with great Reſpect, and to believe that I am ſincerely

SIR,

Your moſt Obliged

Humble Servant,

Ja. Harvey.

THE

THE PREFACE.

THO' it be certain, that the Recovery of the Sick is the great Design of the *Medical Art*, and undoubtedly more necessary than to *presage* the *Event* of their Distempers; yet 'tis no less certain, that when the *Prognostick* Part of Medicine is managed with due Circumspection, Caution and Prudence, besides, that it acquires no small Esteem and Authority to the *Physician*, and vindicates the Profession from the Reproaches and Contempt that's thrown upon it; nothing is more conducive to incline and dispose the *Patient*, with some Confidence and Assurance, to observe the Advices of such, who not only can reason upon the Nature of his Distemper, account for its Causes, and tell him what happen'd before the Invasion of his Illness, but likewise what may be the *Issue* and *Event* of it. Whereas

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the *Predictions* that are doubtful, wavering and uncertain, not only render the Patient hopeleſs, but the Phyſician alſo ſuſpected of Ignorance, eſpecially, when nothing is more reaſonably expected, than that he ſhould prevent a dangerous imminent Symptom diſcover'd afar off, and by his Art haſten a good one long'd for.

Thus it was, that the Great *Hippocrates* acquir'd that juſt Eſteem, which always will be due to his Merit. For, having with the greateſt Diligence and Induſtry obſerv'd the moſt minute Circumſtances of Diſeaſes, he could not only diſtinguiſh the one from t'other by the Signs that properly belong'd to each; but by comparing the ſame ſort of Diſtemper which happen'd to ſeveral Perſons, and the Accidents which uſually appeared before and after, he could foretel a Diſeaſe before it came, and give a right Judgment concerning the *Iſſue* and *Event* of it.

Now, the Nature of moſt Diſeaſes being the ſame as in former Ages, and their Periods obſerving the ſame Order as formerly, the Obſervations made concerning them, as they are perpetual, ſo likewiſe the more certain. And foraſmuch

as

as the Concern we have for our Bodies in the Diſorders of Sickneſs, makes us ſolicitous to know what will become of them, and no leſs careful to apply to thoſe who make it their Profeſſion to know the Fabrick and Conſtitution of a Human Body, and the Changes and Alterations that happen to it, for their Advice and Sentiments concerning *Ours*.

I purpoſed therefore, at firſt indeed, for private Uſe and Satisfaction, to inquire into the Advances that have been made in the *Prognoſtick* part of *Medicine*, not only from the excellent Obſervations of the Divine *Hippocrates*, every where to be found in his Writings, but more particularly collected in his Book of *Aphoriſms*, *Predictions*, and *Obſervations*, which were kept in the School of *Coos*, but alſo from thoſe latter ones of more modern Authors, which indeed are deſcribed with all imaginable accurateneſs; every one having trod the old Path, and probably upon the Authority of that Great Man; but (as if *Empyriciſm* ſhould always prevail) without any further Inquiry, or giving us the true *Reaſons* of thoſe remarkable *Phænomena* upon which the *Prognoſtick* part of Medicine ought to be founded.

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The Reſpect that's due to the Memory of the Antients, will not permit us to imagine, that this unaccountable Lazineſs could proceed from a Belief, that Medicine was a conſummated Art, and brought to due Perfection, and that they were only to enjoy the advantages of that Light which they had from thoſe that went before them. But, they may be more juſtly charged with neglecting to inquire into the *Reaſons* of that vaſt number of Obſervations, which ſeem to have been taken upon meer Authority, tho' many of them be founded only upon particular Caſes, and ſet off with amuſing and unintelligible Terms, without any regard to the unalterable Laws of *Motion* and *Mechaniſm*. And tho' it be true, that 'tis peculiar to *Medicine* to be vaſtly extenſive, and that one Man's Life ſeems to be too ſhort to arrive to any tolerable Perfection in it; yet much of this may be juſtly aſcribed to an undue treatment of it, or ſitting down upon thoſe bare Obſervations, which others have made, without ever ſatisfying our *Reaſon* concerning them. For,

How conducive ſoever towards the improvement of Medicine, Obſervations may be, yet they muſt be much more ſo, when

when founded upon *ſolid Reaſoning*, which, tho' it be the Meaſure and Standard of all our Actions, and the *Baſis* of Arts and Sciences, has nevertheleſs been leaſt of all regarded in this. Hence are the ſmall Advances that formerly have been made in *Phyſick*, which, probably, had been brought to greater Perfection than now it is, had it been treated as it ought to have been, and conſidered in its own Eſſence, and rather as a Science than an Art; ſeeing its *Object*, namely, *Human Body*, as 'tis one of the moſt ſurprizing Pieces of *Mechaniſm*, ſo are its Diſtempers owing to a Vitiation of the Quantity, Quality, and irregular Motion of its Fluids, to a bad Diſpoſition and Texture of their Channels, and of the other ſolid Parts. Now, all theſe being only Modifications of material Beings, and having the Dimenſions of Bodies, muſt undoubtedly be examined by the Effects and Cauſes of thoſe Qualities, and as far as they are accountable by the known *Laws* of *Mechaniſm*.

But, as if this laſt had been reſerv'd to atone for the Lazineſs and Ignorance of former Ages, more Diſcoveries have been made, and greater Light of late has been brought into the dark Regions of *Phyſick*, than for ſome thouſands of Years paſt,

paſt, which is juſtly owing to the Induſtry of thoſe brighter Minds, who to make the greateſt Removes from *Empyriciſm* that could be, have taught us to *reaſon* clearly and intelligibly upon natural *Appearances*, inſtead of amuſing our ſelves with precarious Hypotheſes and Conjectures.

But, this matter being already diſcours'd on by the Learned Author * of the *New Theory of Fevers*, I ſhall only add, that in reflecting upon the preſent State of the *Medical Art*, as I'm convinc'd, the moſt Ingenious of the Age, who are ingag'd in the Profeſſion, will acknowledge the great Improvements the Great *Borelli*, *Bellini*, *Pitcairne*, and ſome others have made in it, ſo neither can I, in the treatment of this Subject, wherever occaſion has offered, forbear to diſcover my Ambition in following after that *Light* which thoſe Great Men have enriched the Art with. And as to the Reader's Cenſure, to abate it in ſome meaſure, I think it not improper to acquaint him, that I had rather own all I may be charg'd with in the management of the following Diſcourſe, than trouble my ſelf more about it; and therefore ſhall neither beſpeak his Indulgence nor favourable Conſtruction.

Dr. *Cheyne.*

THE

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PRÆ-

PRÆSAGIUM MEDICUM.

Introduction.

COuld our Bodies always perſiſt in their Natural State without any Alteration, and every part whereof they are compos'd, exert its Office; we ſhould enjoy a perpetual courſe of *Health*, a State and Condition always deſirable. For every one that values Health, and knows how nice and brittle the *Make* and Fabrick of his Body is, and how ſoon diſordered, Wards off, as long as he can, the Diſeaſes that aſſail him; becauſe, every Indiſpoſition and Diſorder, threatens Diſſolution and *Death*, which is the greateſt Diſeaſe.

But no body enjoys *perfect Health*, and they only are ſaid to be ſoundeſt, who are leſs pained than others or themſelves uſe to be; For beſides, that, every part of Humane Body conſiſts of Principles which naturally tend to diſſolution, the Impreſſions that are continually made upon it from

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without and within, muſt more or leſs interrupt the Courſe of that we call *Health*; not to mention, that, ſome even in a *Phyſical* Senſe, are in a dying State, as ſoon or before they come from the Womb; their indiſpoſition being owing to their Primary Conformation, which can never be repaired.

But, tho we ſhould enjoy a tolerable State of *Health*, for ſome time, yet, by the repeated Functions of Life, the Springs that move our Bodies, at laſt come to be weakned and unbended; and the Diſtempers that follow thereupon continue while we Live. Again, ſome die before they are Sick, that is, affected with any apparent Diſtemper or Senſe of Pain. Thus we fall a Victim to *Suffocations*, *Appoplexies*, *Polypus's*, *Dropſies*, Ruptures of Latent *Apoſtems*, and ſuch like Diſtempers. A ſudden Perturbation, Obſtruction and Confuſion of Spirits in an Inſtant extinguiſheth the vital Flame. And when the great Spring, the *Circulating Blood* and vital Stream, for which ſo exquiſite Pipes are made to diſtribute it to all the Parts, and return it back again to its firſt Source, for reiterated Motions and Functions ceaſes to move, (which upon many Occaſions, and ſeemingly ſlight Diſorders it frequently doth) Life ends.

But ſuch Diſeaſes as are owing to an Impotency of Nature, a Defect in the Inſtruments of Concoction and Organs of Secretion, Indigeſtion, Congeſtion or diſturb'd Motion of Humours, come not to their Period

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ſo ſoon; And tho at Laſt they come to be fatal, yet, their Symptoms are ſo obvious, and they give ſuch Evidences of their Nature, that, 'tis almoſt Impoſſible to miſtake them, or not know what they portend. Whereas, thoſe Diſtempers which are chiefly ſeated in the Fluids, and therefore *acute* and ſhort, by reaſon of their quick and violent motion, occaſioned ſometimes by external Cauſes, and ſometimes proceeding from this or that peculiar Inflamation of the Blood; irregularity and *Intemperies* of particular Bodies, run ſpeedily through their Period; and are ſo nice and unmanagable, that, ſometimes they ſeem to baffle *Experience* it ſelf, and the very Principles of the *Prognoſtick Art.* Having therefore propos'd to my ſelf an enquiry into the State of our Bodies in the laſt mention'd Diſtempers, what's portended by their *Symptoms*, and if the Machine can be repaired and put in order for ſome time (for it cannot laſt long in Compariſon with more ſolid Bodies) or, if the diſorder riſes ſo high, that it cannot be ſurmounted but muſt needs come to a diſſolution; It may not be unfit in the firſt place, to enquire what's portended and preſag'd by the frightful Symptom and Appearance of a *Delirium* or *Raving.*

CHAP. I.

Of a Delirium and Frenzie.

IF we can't account for the Union of the Mind and Body, nor reach it with the Eye of our Reason; yet, the mutual *Sympathy* that's between them, is very obvious: For, while the Blood and Spirits run briskly in their Chanels, the Mind is pleas'd and joyful; But when they are slow and dull or obstructed in their Motions, we are sad and pensive; and upon the least indisposition of the Body, our Mind is put into Disorder and Perturbation: And when the indisposition is great, and the *Crasis* of the Blood considerably altered, the Texture and Cohesion of its parts dissolv'd, when the Globules of it are broken, and the Nervous Liquor runs confus'dly and at random into the *common Sensory*: a Thousand different *Species* must be represented to the Mind, without order and Coherence, exciting it to all those appearances and irregularities, which we see in those that are *Delirious*.

The ways by which the Mind may be brought into this perturbation, are as many and various as those by which an Indispositi-on may be induc'd upon the Blood; and their Effects are more or less dangerous, and of longer and shorter Continuance according to their

their productive Cauſes. Thus, the *Delirious* Motions of the Mind, that are owing to immoderate Drinking, Anger, want of Sleep, and the like, are taken off, and become more regular, when the Blood hath thrown out the Heterogeneous Particles of the hot Liquors, and recovered its wonted Circulation. Thoſe that are cauſed by Stroaks, Wounds and Contuſions of the Head, continue longer and are more dangerous; chiefly, becauſe the Veſſels of the Brain are cut and Diſordered, or a Fermentation raiſed in the Blood. Again the *Delirium* or Frenzy of Lunaticks, tho it laſt ſome Months or Years, and ſometimes all their Life, is yet leſs dangerous; either becauſe their Blood is ſo much fixt, that it cannot riſe to a Fermentation, or ſo fluid, that it cannot be obſtructed in the ſmaller Veſſels. But the *Delirium* and *Frenzie* that's here conſider'd, as one of the Symptoms of continual Fevers, is different from all thoſe, not only with reſpect to its Productive Cauſe, but alſo to its dangerous Effects.

Whatever be the primary or productive Cauſe of Feveriſh Diſtempers, 'tis plain that at the firſt Invaſion of thoſe that are acute and continued, the active Liquor of the Nerves ſeems to be fix'd, ſhut up, and hudled together, and the Blood in the Veins to be depriv'd of its circulating Motion: For, the extreme parts are cold, the Pulſe weak, and the Reſpiration quick, the Patient is in a languiſhing and fainting State; and as ſome have obſerv'd, there is a coldneſs in the Blood taken from his Veins. But this Scene ends

in a little time when the Blood and Spirits recover their force and Motion, and come to be more universally diffus'd: The Cold and shivering is chang'd into Heat, the Pulse is strong, brandishing and quick, the Arteries and Veins are swelled and emboulded, and the Quantity of the Blood augmented, that is, its parts are rarified, according to the Degrees of its Velocity.

The Blood being thus augmented, must distend its Chanels and press upon their Membranes, and the Vessels that are adjacent to them, especially those of the Head, where they are most implicated and twisted. Hence are the exquisite Pains, Stagnation of the Liquids, and other Disorders of the Brain. And when the unusual velocity and heat of the Blood hath continued a considerable time, its *Serum* must be exhausted, and its parts rendred more Viscous and fix'd, because a pression upon the smaller Arteries and adjacent Vessels, must strain out the more Liquid and *Serous* part, or whatever is most fluxible, and thereupon that which remains, must be the less dispos'd for Motion. So that whether we consider the Blood as augmented in the Arteries, (as it must be when it is not emptied into the Veins,) or otherways vitiated by a long continued Heat, its Chanels must be distended, and the Nerves and Fibres, especially those of the Brain contracted, and thereupon an irregular Motion produced in the Animal Spirits, which, not observing any certain and determin'd Order and Coherence, must represent those various

rious *Species* to the Brain, by which the Mind is excited to a *Delirium*, or *Raving*, and at last to that of a *Frenzy*; if it be not taken off by Nature or the interposition of Art.

To see the disorder of the Mind in this State, will readily convince us, that it must be the Product of that of the Body, an Alteration of the whole Frame and Constitution, an intense heat, augmentation or obstruction of the Blood in its Circuit, a Medly of the Liquids and Confusion of the Spirits, a Stagnation of the Blood and Humours in some parts, and a dissolution of it in others, some parts cold and benum'd, and others hot and inflam'd, in some parts a relaxation and flagginess, and in others a *Tension* of the Nerves. In one Word, every thing that tends to the disjoynting of the Machine, and putting an end to its Fabrick and Motion.

Now, it comes to be considered, what may be the Event and Result of this frightful Symptom; and what are the justest *Prognosticks* that can be made, with respect to the Death or Recovery of one in this State.

That the irregular Motions of the Nervous Liquid, immoderate watching or waking, the exquisite Pains of the Head, *Delirium* and *Frenzy*, must continue, till the heat and quantity of the Blood, stagnated and collected in the Capillary Arteries of the Brain, be taken off and diminished, is very plain; and it is likewise certain, that nothing is more conducive to this purpose,

than *Spontaneous Sleep*, and all sorts of *Evacuations.*

As to the first of these, 'tis commonly thought to be a good Sign, and gives fair Promises of Recovery, when a *Delirious* Person after long *watching* falls into a *Spontaneous Sleep*; But how uncertain the Result of it may be, is gathered from *Hippocrates* (a) and for the better understanding of this *Aph.* and the *Sleep* of those that are *Delirious*, we are to observe, that there are always some Intermissions and Exasperations, in this as well as other feverish Distempers, chiefly, because the heat and fervency of the Blood, is not always the same, or equal to it self; being sometimes greater and sometimes lesser, according to the fluidity and viscidity of its parts, and velocity of its Motion. Now, 'tis plain, that when the heat of the Blood is greatest, and its parts rarified or stagnated in the Arteries of the Brain; there must be likewise a Distention or Contraction of the Nerves and Fibres of those parts; and as was observed, an irregular Motion induc'd upon the animal Spirits, and consequently a continual *watching* and *raving*, and at last a *Frenzie*. But when there is any remission of this intensive Heat; that is, a less velocity in the Blood, the distended Fibres are thereupon relax'd, and the Nervous Liquid more equally distributed, and the *watching* changed into *Sleep*, which is longer or shorter interrupted or disturbed, according to the greater or lesser heat and fervency in the Blood; and *Tension* of the smaller Vessels.

(a) Aph. 50. § 4.

Hence

Hence 'tis likewiſe plain, that the ſhorter and more diſturbed the *Sleep* of *Delirious* People is, ſo much the greater is the Velocity and Heat of their Blood; and when the Sleep is moderate, that is, is neither too long, nor too ſhort, diſturb'd and interrupted with Starting, Dreams and Frights; it argues a temperate Motion of the Blood, and fairly promiſeth a Recovery. But, when the fervency and heat of the Blood, and diſtenſion of the Arteries, Nerves and Fibres of the Brain hath continued a long time, they come to be ſo much weakned, relax'd, and unbended, that their Tone and Elaſticity can never be recovered, and therefore the *Delirious* Perſon, after long *watching*, *raving* and *Frenzie*, falls aſleep, or ſeems to be ſo, being depriv'd of all his Senſes external and internal, ſo that he is no more *Delirious* nor ſenſible of Pain; there is yet ſome Motion in his Tongue, but he can't ſpeak, becauſe the Animal Spirits and Circulating Blood, are totally obſtructed without any hope of Recovery.

Thus, in *Delirious* Diſtempers, which are cauſed by the acuteneſs of continued and hot Fevers, it is eaſy to diſtinguiſh; the Sleep that's Salutary and tends to recovery, from that which is Mortal, reſpect being always had to the Degrees of the velocity, Heat and Inflamation of the Blood, Diſtention or Preſſure of the Nerves, Obſtruction of their Liquid, and continuance of the Watchings.

Again,

Again, great hopes of Recovery in this Distemper, are had from all sorts of *Evacuations*, chiefly, because they check the velocity of the Blood, diminish its quantity, take off its obstruction and relaxeth the Nerves. This is remarkably certain in the *Delirium* of *Lunaticks*, there being nothing more conducive to take off that Distemper than Evacuations by Sweat, Urine, Excretions by Stool, the Hemorrhoids and Hemorhages. *Aph.* 21. § 6. *Aph.* 5. § 7. But, no just *Prognosticks* can be form'd concerning *Evacuations*, without a due regard had to their Quantity and Quality, and the time and place in which they happen. Thus, a copious bleeding at Nose, in the beginning and height of this Fever, is a good Sign, not only as it takes off the heat and fervency of the remaining Blood, but also, as it brings with it some part of the febrile Matter, which either mitigates the Distemper, or takes it quite off. But, on the other hand, no Sign is more dangerous and mortal, than when the Hemorrhage amounts only to a few drops; and of a blackish Colour. For, it signifies not only an extream weakness in the lesser Vessels, and acidity in the Blood, but also, an obstinate obstruction in its circulation through the Capillary Arteries, whose sides being pressed and embouldned by the rarified or stagnated Blood, and, finding no passage into the Veins, must recoil upon, or break those finer Membranes and Vessels. And,

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The *LAUGHTER* of those in a *Delirium*, hath been accounted a Sign less dangerous, than that of shedding involuntary Tears. But, 'tis no hard matter to know what's portended by both, if we advert to the great pressure that's made upon the Capillary Arteries and other Vessels of the Brain, when they are embouldned with a greater quantity of rarified or stagnated Blood than is usual: For, thus the *Lymph* and Serous part of the Blood must be strained into the *Glandula Lacrymalis*, and thence into the Angle of the Eye in watry Globules or Tears; but, this Moisture is insensibly dried up and exhausted by a long continued heat and inflamation of those parts, and the little of it that's yet remaining, is thin and acid, appearing sometimes in this, and sometimes in the other Eye; than which, there is no Sign more pernicious and mortal, not only becauſe it signifies an extream dryness and want of *Lymph* and *Serum*, and a preternatural Secretion of it, but also, an irrecoverable flagginess and relaxation of the finer Membranes and Vessels of the Brain.

Neither can a *Delirious Laughter* be less dangerous, unless it proceed from the Representation of some *Species* to the Mind and Reflection upon it: For, in this Case, this *Delirious* Motion, not only tells us the state of the Brain, but likewise, that there is yet some motion and fluidity in the Animal Spirits, and vigour in the *Viscera* and Muscles of the Cheeks and Mouth. But, all the Motions of *Delirious* Distempers being (for the

the reasons above mentioned) irregular and undetermin'd, we are not to think that this of *Laughter*, can be any thing else than a Distension or Convulsion of those Parts, caus'd by a continued Heat, Dryness, and want of Moisture. For, in whatever part this is wanting, there must needs be a Contraction or *Tension*, that is, the part becomes inflexible or Convulsive. Hence it is, that Convulsive Motions usually accompany or follow upon a *Delirium* or *Frenzie*.

Hippocrates has considered this fatal Symptom of Fevers, as accompanied with a *difficulty* of *BREATHING*, and thus condemn'd it as a mortal Sign. (*a*) Neither had he a good Opinion of it, when it followed upon immoderate bleeding, (*b*) the Iliack Passion, (*c*) and Pulmonary Distempers, (*d*) The Truth of this first *Aph.* not to mention that of the rest, will appear to be very plain, if we observe, that the manner of *breathing* in those that are *Delirious*, is not always the same, but different according to the Degrees and Continuance of the Heat of the Blood, increase of the Fever, Generation and Velocity of the Animal Spirits. For,

(*a*) Aph. 50. § 4.
(*b*) Aph. 9. § 7.
(*c*) Aph. 10. ibid.
(*d*) Aph. 12. ibid.

As the first of these, namely, the Heat and Inflamation is augmented, the *Respiration* likewise, becomes more *lowd* and *slow*; but, in a little time it is quite otherwise, by reason of the alter'd state of the Nervous Liquid, of which a more than usual quantity, as well as too volatile and irregular in its Motion, may be generated or separated from the Blood in the beginning of the Fever.

Now

Now, 'tis no small Portion of the Animal Spirits, that is requisite and necessary to move the Muscles of the Breast, even in a State of Health: But, when the Fever is augmented, and the Patient is become *Delirious*, the quantity of this Nervous Liquid, is very inconsiderable, not only because it is not supplied and generated by the Blood, (which after a long Heat and Inflamation is diminished vapid and impoverished) but also because it is obstructed in its motion, and therefore the *Respiration* must be *slow* and *lowd*; but, in a little time, it comes (for the same reason) to be so *low* and *slow* that the sick Person breaths no more.

It seems to be a happier *Omen*, when, a *Delirium* comes upon those in a *Lethargy*, *Coma Vigil* and the like Distempers; because it Indicates a Heat or Velocity in their Blood, and that the Viscous and crude matter of the Lethargick Distemper, is rendred more fluid, and dispos'd to be thrown out by the ordinary ways of Excretion, or that 'tis collected into some Tumor or Abscess. But whatever be the Advantage that's to be had from the Conversion or Transmutation of one Disease into another, (and this happens very often) yet, this of a *Delirium* or *Frenzie* is always to be suspected as one of the most dangerous, in whatever case it Happens. Only, that which sometimes intermits may be less dangerous, and go off at last upon a freer Circulation, and more equal Distribution of the Blood: But, when the Inflamation is great and of a long continuance,

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the *Delirium* must end in a *Frenzie*, gnashing of the Teeth, fix'd and unmoveable Eyes, insensible voiding of Urin and Excrements, a dry and black Tongue without Thirst and Pain, a Gangrene of the Brain, or a Mortification and Corruption of its Parts, and a Dissolution of the Animal Machine.

CHAP.

CHAP. II.

Of Prognosticks taken from the Senses.

THat all the Parts of Human Body owe their Origin to the Brain and its *Meninges*, as some will have it, is a Doctrine not yet commonly approved of; or confirmed by repeated Observations. But that there are in the Brain a stupendous and infinite number (besides those which are more visible and remarkable) of twisted Strings, Cords, or (as we may at least suppose them to be) hollow *Tubuli*, containing an active, spirituous and thin Liquor, of a greater or lesser Motion and *Impetus*, according to its *Flux* and *Reflux*, sometimes relaxing, and sometimes distending its Vessels, and receiving the Impressions of the Senses and Mind, is more certain. As also that they are either vibrated in their Extremities without the Brain, as in the Senses by external Objects, and the Pulsation is propagated to the Brain, representing to the Mind those *Species* that are proper to the Object; or, they are moved in their other Extremity within the Brain, and the Impression receiv'd from the Mind, is propagated in an instant to the external Parts; so that whatever be the Impression that's made upon those Vessels in either of their Extremities, the same must be propagated to the other. There

There is no one but knoweth that this nice Fabrick of the twisted Fibres or Nerves, and the Spiritous Liquor contained in them, may be a thousand ways disorder'd; and thereupon as many Diseases and Distempers brought upon the Body: For, when they are too flaggy and flexible, their Elasticity is so weak and inconsiderable, that they cannot propagate the Impression that's made upon them by the Mind or external Objects, and when they are too dry and hard, they must be necessarily contracted, and their Liquor obstructed in its Motion. Hence are all the Disorders of the Senses, the State of which plainly indicates that of the Sick, the Nature of the Disease, and the result of it.

In all acute Distempers a particular regard is always had to the *Head*; chiefly because its parts being subtil and fine, and of a curious Structure and Mechanism, are soonest brought into disorder: And altho we cannot see what's transacted within the Brain; yet, its State and Condition is more than guess'd at, by its Effects upon the Adjacent Parts; Especially those of the *EYES*, which are variously affected, according to the disorders of the Brain, which are chiefly, if not altogether owing either to a *Plethora* of Serous and Viscous Humors, and that of the Blood, or to a wasting and decay of its Parts.

Under the first sort are comprehended, all Sleepy and Lethargick Distempers, in which, there is more or less Privation of all the

the Senses, according to the Degrees of Cold and quantity of gross Humours amassed in the Glandules of the Brain. Hence is the preternatural Sleep, swelling of the *Eyes*, and shutting of the Eye-Lids. For, when the Brain is stuffed and fill'd with cold and viscous Humors, the Blood is so much altered in its quality, that it cannot circulate in a due quantity, neither can it Generate, or Separate any animal Spirits, but such as are gross, unactive and unfit for Muscular Motions. The Muscles upon this account become flaggy and soft, and cannot be contracted: And if there be a greater *Flux* of the Animal Spirits, (whose Motion now is irregular) into the *Musculus Constrictor*, than into the *Levator*; the *Eye* must be shut, and likewise swelled and enlarged, upon the addition of new Blood to that which was already too viscous and clogged with gross Humors in the Brain, the Colour of the *Eyes*; nevertheless, being rather pale than red and Sanguin, by reason of the whitish Humors mixed with the Blood.

From this and the like Appearances of the *Eyes*, the Event of all the Distempers, of which it is a Symptom, may be presag'd; respect being always had to the manner of Sleeping and Continuance of it: For, as the *Eyes* are partly or entirely shut and closed, and the Sleep short or profound; so is the Danger. Upon this account, a *Carus* is thought more pernicious than a *Coma* or *Lethargy*, and an Apoplexy as every one knoweth yet worse (*a*). And, when either

(*a*) Hipp. Aph. 42. § 2.

of these come upon an acute Distemper, the Case is desperate and without Hope. For, it signifies, as was observed, a dissolution of the Parts, a total obstruction of the Animal Spirits, and a Relaxation of the Nerves and Fibres that can never be recovered; especially in Old People whose Vessels and Canals are naturally render'd flaccid; and their Liquors exhausted, vapid, and impoverish'd.

The other mentioned disorder of the *Eyes*; namely, that which is caused by a *Plethora* of Blood, obstructed in the Capillary Arteries of the Brain, is their *Splendour* and *Sanguin Colour*: As this Appearance of the *Eyes* is always a Symptom of feverish Distempers, so likewise of amassed and stagnated Blood, and therefore was observed by *Hippocrates* (a) when it was accompanied with Deafness, Heaviness of the Head, and Distention of the *Hypocondria*, to prognosticate an Hemorrhage at Nose. Of this Opinion likewise was *Galen*; having as he tells us, upon the certainty of this Observation, foretold an Hemorrhage at Nose, to one of his Patients, in the presence of many Roman Physicians. 'Tis plain indeed, that this Prediction may oftner hold in those that are Young, whose Blood is brisk and Spiritous, than in those of a more advanc'd Age. But high coloured and *Blood-shot Eyes* in all acute Diseases, is dangerous in both. For, as it signifies a greater than usual quantity of obstructed Blood, in those finer Vessels that are easily corroded, broken, and cut,

(a) Coac. Præ'ag. § 2.

cut, ſo is it ſtill uncertain, whether, the Blood iſſuing at the Noſe (if it happen at all) ſhall be of that quantity that's requiſite, effectually to mitigate the Symptoms of the Diſeaſe, or prevent its further Progreſs. But, if after this eruption of Blood, a Darkneſs or *Splendour* of the *Eyes* continue, accompanied with a cold Sweat upon the Forehead, Temples and Neck; and the *Lips* and *Eyes* come to be Diſtorted, Death is at hand.

This bright and *Flame-Colour* is likewiſe obſerved in the *Eyes* and *Faces* of thoſe that are affected with Pulmonary Diſtempers: For, in ſuch, the Blood being obſtructed in the Lungs, muſt ſtagnate in the Branches of the *Vena Cava* that are diſtributed to the *Eyes* and *Face*, while ſome part of it is ſtill flowing into the Arteries. Hence, is the Swelling of thoſe Parts, and the brightneſs of their *Colour*: For, the Blood of thoſe in this Diſtemper is very thin, and purified from its groſſer Parts, which are intercepted and congeſted in the Lungs, where the Inflamation is greateſt. But more of this hereafter.

The *DEAFNESS* that comes upon *Fevers*, is commonly obſerved by Nurſes and Byſtanders to be a Sign of Recovery; tho', in ſome Caſes hereafter mentioned, it is nothing leſs. For, all the Diſorders of the Brain, (of which this is a Symptom) whether cauſed by a *Plethora* of Humours, or interception of the Blood in its capillary Arteries, are always dangerous and ſuſpected;

For this reason, *Deafness* can be no less such, either with respect to its productive Cause or Effects, than are a *Delirium* and *Frenzie*, *Watching* and *Convulsions*, and other like fatal Symptoms of *Fevers*, which are the produce of intercepted Blood and Humours, and an inflam'd Brain. If this disorder of the *Tympanum* of the Ear and auditory Nerves, be taken off by Evacuations, or an Hemorrhage, (*a*) which sometimes happens, in this case only, and in so far as it is *Critical*, it may be said to be a good Sign, but consider'd in it self, and with respect to its productive Cause, always a bad one. For, in a *continual Fever*, if one is so much weakned that he neither sees nor hears, Death is not far off. (*b*)

(*a*) Aph. 28, & 60. § 4.

(*b*) Aph. 49. § 4.

But as every one may observe, one ill Symptom comes not alone, and therefore, this of *Deafness*, is always to be consider'd with respect to others that accompany it, as also, the Nature of the Evacuations, (if they happen) especially that of Blooding at Nose. For when these are not Large and Copious, and consisting of the Humors that ought to be separated and thrown out, the Distemper is so far from being mitigated or taken off, that 'tis the more exasperated, and followed with a train of worse Symptoms, such as are darkness and obscurity, or redness of the *Eyes*, *watchings*, a *Delirium* and *Frenzy*.

Near a-kin to this of *Deafness*, is the *TINGLING* of the Ears, that commonly insues upon some acute Diseases. Of this

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the Sick sometimes complain, and imagine they hear as 'twere the humming of Bees, sometimes a *Tingling* and *Hissing*, and then, a more loud and interrupted Noise, which, according to *Galen* is caused by a *Flatus* or Wind, raised by the inflamation of the Brain, or rarefaction of its humidity, and communicated to the *Tympanum* of the *Ear*. 'Tis not indeed to be doubted, that, when there is an interception of the Blood, in the Arteries of the Brain, and a continual Addition, or accession of new Blood, without being emptied into the Veins, those little *Tubuli*, must be soon distended and enlarg'd, by an excessive Quantity of Blood, and thereupon an inflamation of the Part, and a pressure upon the Brain, must insue. And, there being also a Distribution of Arteries into the Parts near the *Tympanum*, and their Pulsation being augmented by the inflamation, must be propagated, together with a copious Evaporating Heat, to the Membrane of the *Tympanum*, moving and exciting in it, several kind of Sounds, according to the *Impetus* of the Heat, and pulsation of the Arteries.

But to drop this account of *Tingling* in the *Ears* in Fevers, and other like acute Distempers; *Hippocrates* affirms, (*a*) that, 'tis a Mortal Sign, if it be continual and without Intermission, or, comes at the beginning of a Fever; and continues during the Progress of it: Such a Symptom being commonly followed by a *Delirium* and *Frenzie*, unless it be prevented by Art, or some natu-

(*a*) Coac. Præsag. § 2.

ral Evacuation. But that in Chronical Distempers, or, before the Invasion of them, this disorder of the *Ears* threatens a long Continuance of the Disease, and the more certainly, if it be attended with violent Pains of the Head, Heaviness and Giddiness, Slowness of Voice, and benum'dness of the Hands.

As to the *SMELL* and *TASTE*, 'tis an ill Sign, when all sorts of Food and Medicine that are offer'd to the Sick are Loathsome and Nauseous, for it signifies a Relaxation of the Fibres of the Nose and Tongue, or plenty of putrid Humours in those parts, obstructing the *Effluvia* that comes from the Object, and their impression upon the Nerves. The Affections of the *Tongue* are excellently described by the Learned *Baglivius*, and hath well observed that it gives us the surest Signs, by which we may know the State of the Blood, and consequently that of the Body. For, *says he*, an acid *Taste* upon the *Tongue*, betrays the acid Constitution of the Blood, and of the other Humors separated from it, a Salt *Taste* speaks the saltness of the Blood, a bitter *Taste* gives us to know, that it abounds with bitter Particles, a viscid, mucous, insipid *Taste*, speaks plenty of the like Particles. If the *Tongue* is moist, so is the Constitution of the Blood; if dry, then the Blood is of a dry inflamatory Nature. For this reason, we are not to look upon

on this to be one of the worſt ſigns in Sick Perſons, that what is offered to them, *taſts* Bitter, Salt, inſipid, and the like, but rather when they have a total Averſion to every Thing that may be thought beneficial to them. But more of this and the Senſe of *FEELING* in the Sequel.

CHAP. III.

Of Prognosticks taken from Pains.

Divisio Continui, the antient Definition of Pain, is by some disprov'd and rejected, as being contrary to daily Observation and Experience. The Reasons adduc'd for this, are these chiefly, namely; That, not only the Bones, but likewise the Scull, and some parts of the *Viscera* and Flesh, can be cut and corroded without any Sense of Pain. And, although it be true, that, not only the Nerves, Membranes and Tendons, are the most sensitive Parts, and that others destitute of these, want Sense and cannot be pain'd: Nevertheless, the most sharp and intollerable *PAINS*, do not happen, when the Membranes or Nerves are dissected, but rather when they are entire. It is likewise certain, that, if the Nerves are prickt with some sharp Instrument, or corroded with Salt Juices, there follow most sensible and exquisite *Pains*; but, are not caused by a Division of the Continuity of the Fibres, they being so fine and subtil, that they cannot be divided by the sharpest Point. Neither is *Pain* excited by a Dissolution of the Texture of the Fibres, any other way than by *Contusion*. 'Tis therefore more probable, that all *Pains* are caused by a *Ten-*

a *Tenſion*, or twitching of the ſubtil Fibres of the Nerves, whoſe Spiritous Liquor being irritated and ſtimulated, produceth an irregular Motion, which being communicated to the Brain, excites thoſe Convulſions or Paſſions which we call *Pain*. Hence it is, that the moſt violent *Pains* inward or outward, are ſoon mitigated by *Narcoticks*, which, bring a ſleep upon the Mind, take off the *Stimulus*, relax the irritated and diſtractile Fibres, and free them from *Tenſion*.

But, here 'tis to be noted, that all Irritations or Vibrations of the Nerves, and concuſſive Motions of the Parts of which they conſiſt, doth not neceſſarily infer *Pain*, there being many ſuch that have a contrary effect upon the *Mind*, exciting it to a Senſation of Pleaſure, by a gentle and regular Motion of the Nervous Liquid. This then of *Pain* muſt be an irritation and vibration of the Nerves in the higheſt Degree, or ſuch, that muſt bring an uneaſineſs upon the *Mind*, or *Senſio Moleſta*. This will appear more plainly in the common Account of the various kinds of *Pains*, to which we muſt alſo retain, that we may have a better *view* of the following Obſervations.

Some *Pains* then are *Pulſative*, (ſo called) others that are felt as a dead weight lying upon the place affected, ſome with a *Tenſion*, or ſtretching of the Parts, ſome with *Cutting* and *Eating*; others with *Lancing*, *Pricking* and *Stiching*; and ſome that are cauſed by *Benumdneſs*, ſome Pains

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are *fixed*, and others *transient* and *fleeting*, some are *perpetual*, and others *intermitting*, some are *vehement* and *exquisite*, and others that are *tolerable*; some in the *beginning* of a Disease, others after the *invasion* of it; some affect the *external*, and others the *internal* Parts; some the Noble, and others the more Ignoble *Viscera*. All which differencies of *Pains* (that only excepted, which is felt as a weight upon the affected Part, which seems to be rather a *Relaxation* than a *Tension* of it) being caused by a more or less Irritation, or Pulsation and Distention of the Fibres, Nerves, and Membranes, or Inflamation and Turgency of the Blood and Humors in the Parts affected, as in Abscesses, Nephretick Cholicks, Pleurisies, Dysenteries and Gout, *&c.* it will not be amiss shortly to account for some few of them. Thus,

PULSATIVE PAINS, as the Name imports, implies an unusual Pulsation in the affected Part, caused by an Interception of the Blood in the Arteries, so that, not having a free Course, it must be partly or altogether obstructed (be the cause what it will) and congested, because it cannot be emptied or derived into the Veins, nor return to the Heart, which is always discharging new Blood into the Arteries. Now, that this unusual quantity of amassed and collected Blood, must distend its own and adjacent Vessels, causing a *Pulsative Pain* to be felt in the Place; I think is very plain. For,

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there being no part of the Body except the Arteries, and they only, that have this natural Motion called *Pulſation*, of (which, in a State of Health one is not ſenſible; that is, it brings no uneaſineſs upon the *Mind*) when *theſe* come to be diſordered and loaded with a greater than uſual quantity of intercepted Blood, not only their *Pulſation*, but alſo their *Extenſion* is augmented, which muſt neceſſarily cauſe a *Tenſion* and *Pulſative Pain* in the affected Part.

PRICKING and *LAUNCING PAINS*, are likewiſe owing to a *Tenſion* of the Parts, but with this difference; that, whereas thoſe that are *Pulſative* are cauſed by collected and intercepted Blood in the Arteries, theſe, namely *Launcing* and *Pricking Pains*, (ſo called, becauſe they are felt, like the infliction of a ſlight Wound by ſome ſharp point,) muſt be occaſioned by ſome hot, thin, bilious and active Humour, inſinuating it ſelf into, and ſeparating the fine and ſenſible Parts of the Fibres and Capillary Veſſels. And that the *Pains* thus excited, are felt ſometimes in this and ſometimes in that part of the place affected, and alſo ſometimes exquiſitely ſharp and cutting, and ſometimes more tolerable and eaſy, muſt be aſcribed to the *Impetus* of the inſinuating Humours, and difference of the Particles that are invaded. This is very remarkable in all Inflamations and *Hot Tumours* that happen in the Nervous Parts, from which there is a conſtant Expiration of hot Particles and *Efluvia*,

fluvia, but when these are intangled and cannot fly off, they must invade the Parts of the nearer Membranes and Fibres, and according to their Subtilty and Motion, divide and distract, and pull them asunder a thousand ways.

Of the same nature almost are those called *BREAKING* and *DISTRACTING PAINS*, being caused by a Divulsion or pulling asunder of the *Periostium*, or Membrane that covers the Bones. That, this is done by whatever can insinuate it self, (whether it be a Hot, Cold, Thin or Gross Humour, is all one) into the Parts of the External or Internal Surface, small scattered Holes, Cavities and hollow part of the Bones, is very plain. For, it cannot be imagin'd that this fine Membrane that's so intimately united to the Bones, can be tear'd and pull'd from them, but with the most *exquisite Pain*; especially when the Membrane is strong, thick, and resistible, such as are the *Pleura*, *Pericranium* and *Dura Mater*, &c. in which, are felt the most *intollerable Pains*; and the rather, because those Membranes are naturally distended, and don't easily yield, to whatever piercing and insinuating Humours.

Again, *HEAVY PAINS*, to mention no more, seem to be different from all the former, for here is no *Tension* of the Parts, but rather a Heap and Collection of viscous, gross, cold, and Serous Humours, pressing upon the adjacent Parts: (especially, when there is any defect in the Nerves, Muscles, or Mem-

Membranes of the Place) For, where-ever ſuch Humours happen to be, the parts are rendred flaccid, and incoherent, without *mutual Contact* or *Tenſion*, and as 'twere corrupted and putrified, or the Fibres and Capillary Veſſels are thickned and ſwelled, and therefore muſt preſs upon ſome Muſcle and Nerve, or both, cauſing thoſe we call *Heavy Pains*. Add to this, that, the Blood in its Circulating Motion and uſual Velocity, coming into any part, the Fibres of which are relaxed and are become flaggy, by plenty of the juſt now mentioned cold Humours, muſt be alter'd in its Motion, Stagnate in thoſe relaxed and adjacent Parts, and with difficulty reach to the Heart again. How this alſo ſhould occaſion heavy Pains in any part thus affected, I think is no hard matter to conceive.

By what hath been ſaid, 'tis evident that ſome, or all, the fore-mentioned kinds of *Pains*, (this laſt only excepted) may happen in one place, and at the ſame time, according to the Concurrence of their productive Cauſes. And, that, when *Pains* become very *exquiſite* and *vehement*, the *Tenſion* of the parts muſt not only be very great, but alſo propagated to the whole Syſtem of the Nerves, Muſcles, and Veſſels, by reaſon of the conſent of Parts, either with reſpect to their Origin, or with reſpect to their Vicinity and Continuity, but always *mediantibus fluidis aut ſolidis*, and that ſuch *Pains* may terminate in Convulſive Motions, Palſies and Abſceſſes, as it often happens in Cholick Pains, exquiſite

Pains

Pains in the Head, and Inflamations of the Brain.

This being premised, in order to know the result and event of *Pains*, it will, no doubt, be granted, that all sorts of them from what ever Cause without, or Concomitant to any other Disease, must be of a bad Character; especially, if they be fixed a long time in any of the Nobler *Viscera*. For they impare the Strength of the Patient, and obstruct the Circulation of the Blood, Concoction, and Secretion of the Humours, as may be observed in that of *Sweat* and other Liquids, which, are Immediately suppressed, upon the Invasion of grievous and exquisite *Pains*. But in acute Diseases, 'tis accounted a Sign of Recovery, when *Pains* invade the Legs and Feet, and happen upon a *Crisis* or Signs of it. But tho' such Pains speak an *Impetus* of the Blood and Force of Nature, to throw off the Matter of the Disease upon those more ignoble Parts: Yet, when they go off without any apparent Cause, as the administration of Medicine or Natural Evacuations, the Humours may be justly suspected to have returned into the Mass of Blood, by which, the Case is rendred more dangerous than it was. And a happy Event of a *Crisis* in acute Distempers, depending upon meer Chance, or, a favourable turn of *Nature*, is always uncertain and never to be rely'd on.

'Tis a fatal *Omen*, when *Pains* that commonly accompany the Inflamation of any Part, especially those that are Membranous,

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as in the caſe of *Pleuriſies*, go off, while the Fever continues and increaſes, and cold Sweats break out with a low intermitting and quick Pulſe: For, ſuch become *Delirious* in a little time, and ſoon after expire, the Inflamation having terminated in a Gangrene. There is always leſs Danger in *Shifting Pains*, than in thoſe that are *fixed* to one place, becauſe theſe (if accompanied with a Fever) uſe to terminate in an *Impoſthume*. 'Tis likewiſe a Sign of Inflamation, and that the Humour tends to ſuppuration, if *fix'd Pains*, with Swelling, and great heat in the *Hypochondria* Breaſt and Back, are followed with a *Shivering*.

Near a kin to *Shifting Pains*, are thoſe that are *periodically* exaſperated, and return at a certain Hour; ſuch Pains are not cauſed by any Peccant Humour bred in the place affected, otherwiſe, they would be more conſtant and continual, and therefore, ſeem to be derived from ſome other Part. For, Humane Body is a bundle and compound of Veſſels, Nerves, Fibres, *&c.* variouſly interwoven, and correſponding to one another, bending this and t'other way, as they are influenced by the Fluids that move within, as by a Spring, and from hence proceeds that great *Sympathy* and *Conſent* of Parts cauſed by their Vicinity to one another, as that of the Midriff and *Pleura*, the Bladder and *inteſtinum rectum*, or, by a communication of Veſſels among themſelves, or that of adjacent Parts, or the Similitude and Continuity

ty of Substance, such as that of the Membranous Parts.

Violent *PAINS* in the *SIDES*, are always dangerous. In Old Men they are for most part Mortal; Chiefly, because they have not Strength to discharge the Matter, and Consumptive Persons seized with them, become *Delirious* with a high Fever soon after, and die in a few days. But when this *Pain* and the Circumstances just mentioned appears, 'tis a Sign that the Consumption has been owing to a preternatural connexion of the Lungs with the Ribs.

Such *PAINS* of the *HEAD*, as are violent and continual in acute Fevers, and accompanied with other Ill Signs, as *immoderate Watching*, *Raving*, an *uneasy Respiration*, and *thin Urine*, are for the most part Mortal. (*a*) The reason of this Observation is taken from the productive Cause of such *Pains*, namely, an augmentation of the velocity and quantity of the Blood, in the Arteries of the Brain: an augmented Motion rarifies the parts of the Blood, which, pressing upon the Membranes of those little Chanels, tear and pull them asunder, causing those insupportable Pains, which, after a long Continuance, are followed with *watching*, *raving*, and other fatal Signs that terminate in Death. And those who are found and in Health, if they be suddenly taken with *Pains* in the *Head*, become Dumb and fall a snorting, Die in seven Days (*b*) unless a Fe-

(*a*) Hipp. 3. Progn.

(*b*) Aph. 51. § 6.

a Fever ensue. For, that takes off the Symptoms of Death and *Stupor* of the Tongue, by a brisk circulation of the Blood in its Chanels.

We have always a good Opinion of Pains that are translated from one place to another, especially from the Head, Throat and Breast, to the Legs and other extreme Parts, but there is no more dangerous Sign, than, when Pains continue after those called *Critical Sweats.*

It has been observ'd, that in all Diseases, especially those that are *acute*, if an Inflamation of the *Abdomen* appear and continue, 'tis the Harbinger of Death. But if there be continual *Pains* about the Belly and *Abdomen*, they signify only an approaching Suppuration. *(a)* And those Pains that invade the *Hypochondria* or Parts adjacent to the Liver, are taken off, by the accession of a Fever, *(b)* but 'tis a dangerous Symptom, when one is taken with Convulsions and Sharp Pains in the *Viscera*, *(c)* and also in the Throat and Ears in acute and ardent Fevers.

(a) Aph. 22. § 7.

(b) Aph. 52. § 7.

(c) Aph. 66. § 4.

CHAP. IV.

Of Prognosticks taken from the outward State and Position of the Body.

BY conversing with the Sick, we come to know the Occasional Causes of their Distempers; but, they cannot tell us what are the inward Transactions of the Liquids and Solids, and the predominant quality or morbifick Disposition of them, whether 'tis sharp, acid, viscid, inflamable, or coagulating; or, whether the Blood abounds with moist, terrestrious, fiery, or fixed and unactive Particles. But, whatever be the Changes and Alterations that are acted in the Springs and Liquids of Humane Body; yet, their Effects must be always expos'd to our *view*, and come under the Cognizance of our Senses. Thus, we see when the body is hot or cold, dry or moist, which indicates its inward State and Condition, and, what will be the Issue and Event of the Distemper.

HEAT is the effect of *Motion*, and *that* of Humane Body, is owing to the Circulation and Velocity of the Blood; when it is brisk and Spiritous, the *Heat* is distributed to all the extream Parts, and perceptible in the *Skin*; which, by the *Thermometer*, is found

found to be naturally hotter by one Degree, than the *Heat* of the Air in Summer, lesser by four Degrees, than the Heat of boiling Water, and yet lesser by Twelve, than that of hot Iron.

This *Heat* of the *Skin*, is not produc'd by that of the *Heart*, as was believ'd by the Antient Physicians. For, it is neither hot nor humid, but as it is washed by the circulating Blood, especially in the Arteries, where its *impetus* and resistance is greatest; so that according to the Degrees of Velocity, and augmented Motion of the Blood, so is the *Heat* of the *Skin*, and the *Heat* of the Parts, in proportion to their Vicinity to the Heart. When the muscular force and power of the Heart, by which, the Blood is distributed into all the Parts of the Body, comes to be weaken'd and enervated; Or, which is the same, when the Pulse is languishing and weak, the *Heat* of the Body must likewise be diminished. For, the *Pulse* is the Diffusion of *Heat*.

Humane Body, is a compound of various and different Chanels and Liquors that move in them. The first of which have a determinate Size, Number, Density, Elasticity, Figure, Proportion and Combination, from which they have the Denomination of Arteries, Veins, Nerves, Fibres, Lymphatick Vessels, Bones, and the like. The Liquids consist of fluid Particles, some whereof are gross, others fine and subtil, and adapted to Motion; which, when it is equal and always the same; so likewise is the

Heat of the Body. But, those Liquids being subjected and exposed to a thousand Changes, Alterations and Impressions from without and within, by the accession of foreign and Hetorogeneous Particles, the variety and different Degrees of *Heat* and *Cold*, which we see in Sickness and Distempers, must needs insue, besides that which is owing to different Ages in the same Body, difference of Sex, Stature and Proportion in a State of Health.

Thus, supposing an equal contraction of the Heart; Those who are of a low, are hoter than those of a larger Stature; for, the Parts of the first, are less distant from the Heart than those of the last, and the Velocity of the Blood is diminished according to the same distance from it, and also the *Heat* of the *Skin*, which, as was observ'd, is the Effect of the Circulating Motion of the Blood. Hence it is, that *Cæteris paribus*, a Child is hotter than a Youth or Stripling; and a Youth is hotter before, than after he is arrived at his full Growth and Stature. For, both have a greater quantity of Blood, circulating within narrower Limits, in proportion to their Body and solid Magnitude, than those of more advanc'd Years. Their Bones being more soft and Cartilagineous, their Fibres more open and Lax, and their solid parts fuller of Moisture, and cannot come to that hardness and consistency, that's observable in Old Age, without diminishing and exhausting the Liquid of Blood, of which they Consist.

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'Tis a commonly received Opinion, that, Men are hoter and dryer than Women: That they are dryer is plain and certain, but ſome will not allow that they are hoter, for the ſame Reaſons that Children are of a hoter Conſtitution than Men, Women, *Cæteris paribus*, having more Blood, and being for the moſt part of a lower Stature, and ſooner arrive to the height of it than Men, ſuppoſing always an equal Contraction of the Heart. Now, that Women are more abounding in Blood than Men, will never be denyed, by thoſe who know that the pure aud ſincere Blood that's monthly evacuated, is cauſed by its *Plethora*, and not by *Fermentation*; as by ſome is erroneouſly believed.

This was to be premiſed, for the better underſtanding the State of the Body, from the *Heat*, *Coldneſs* and *Moiſture* of it in Sickneſs; eſpecially, in Feveriſh Diſtempers, in which, as we have ſeen, the *Heat* of the *Skin* is greater or leſſer, according to the Velocity and rarefaction of the Blood. By how many degrees this Heat is greater in Fevers than in a natural State, is not here to be inquir'd into; whatever it be, 'tis always greater than the uſual Heat, to which the nearer is approaches there is the leſs Danger. But, tho a gentle and *moderate Heat* has obtained this Character of a good Sign; Yet, 'tis carefully to be conſider'd, whether it be equal all over the Body, not that there ſhould be the ſame Degree of it in the remote and extreme Parts, as in thoſe adja-

cent to the Heart, in which it is greatest; but whether it be proportioned to the distance from it.

The reason of this Caution, is, the frequent mistakes that happen in *Prognosticks*, taken from this *moderate Heat*, by which, not only the Patient, but likewise the Physician, has been imposed on, there being sometimes a latent Malignity (as 'tis called) not observable, either by the Pulse or *Heat* of the Body, both having a resemblance, to that of one in Health, while the Flame is raging within, scorching and burning up the *Viscera*. The more that the Blood is disingag'd from, and hath attenuated the Heterogeneous Humours, by which it was intangled and intercepted in its Motion; so much greater is the *Heat* of the *Skin*, as we see in Ardent Fevers: But, in those that are Malignant, there are always some viscous and gross Humours mixed with the Blood, that checks it in its Motion, and makes the *heat* of the *Skin* to be the more *temperate* and *moderate*. And,

We are further to observe, whether this *moderate*, *gentle* and *equal Heat* of the *Skin*, in feverish Distempers, be likewise accompanied with an equal and universal *Softness* and *Moisture*. For, a burning Heat is always *Dry* and without *Perspiration*, as in an *Epiala* or *Lipyria*, and the *softness* and *moisture* of the *Skin* is *unequal*, as in Malignant Fevers, in which the *Hypochondria* are for the most part dry and hard, and also in those who are *Hectick*, whose *Hypochondria* are

are,(eſpecially the right)remarkably *hot*,chiefly, becauſe it contains the greateſt part of the Liver, in which the Bile is ſeparated, and being in this Diſtemper hoter than in a Natural State, it muſt cauſe a diſproportioned Heat in the place; beſides, that their Skin is thick and rough, and the Heat of it unequal, eſpecially after eating.

But though the *Heat* that's commonly obſerv'd in Fevers, be more intenſe by ſeveral Degrees, than this juſt now mentioned; yet, if it be accompanied with the ſame Conditions of *Equality*, *Softneſs* and *moiſture* of the *Skin*, 'tis not to be accouuted one of the Dangerous Signs: For, it ſpeaks a brisk and free Circulation of the Blood, prevents the Inflamation of the *Viſcera*, promotes inſenſible Perſpiration and Coction of the Humours. And if the *inequality* of the *Heat*, is obſerved to be in the extreme Parts, *i. e.* if the Legs and Feet, Arms and Hands are hoter than uſual, there is hope of a Solution of the Diſeaſe and *è Contra*. (*a*)

(*a*) Aph. 1. § 7.

The Heat of the Blood, and conſequently that of the Skin, being (as we have ſeen) the reſult of its Motion and Velocity, 'tis plain, that the *Coldneſs* of the *Parts* that happen in Fevers muſt be owing to a diminiſhed Motion of the Blood, either from groſs and viſcous Humours obſtructing its Motion. Or, becauſe its Velocity being diminiſhed in every Section of the Arteries, according to their diſtance from the left Ventricle of the Heart, it muſt be very inconſiderable in the Capillary Arteries of the ex-

tream Parts excepting thoſe of the Brain, in which, thoſe Veſſels being very numerous and near to one another, the Motion and Heat is more preſerv'd than in thoſe Parts that are more remote. Or, this diminiſhed Motion of the Blood and *Coldneſs* of the *Body*, eſpecially, that of the extream Parts, may be cauſed by an Interception or Defect of Animal Spirits, not ſeparated from the Blood in the Brain, and diſtributed to the Fibres of the Heart, to promote its pulſive Motion, in this caſe likewiſe, the *Heat* is diminiſh'd, and a *Coldneſs* brought upon the *Body*.

But, whatever be the Cauſe of it, *COLDNESS* of the Parts is always ſuſpected, and in continual Fevers, is, for moſt part Mortal, eſpecially in thoſe of a weak Conſtitution. In Chronical Diſtempers, it is not ſo dangerous, nor in Old People, whoſe extream Parts, namely, the Feet and Hands, Noſe, and Ears, are uſually very *Cold*, neither is the *Coldneſs* that happens in intermitting Fevers, nor upon the firſt invaſion of thoſe that are continual to be much dreaded. But, which is chiefly to be obſerv'd with *Hippocrates*, *(b)* is, when the Head and Feet are *Cold*, and at the ſame time, the Sides and Belly are intenſly *hot*, and when after a moderate or Intenſe *Heat*, the extream Parts become *Cold*, and never after recover their uſual, or that *Heat* that commonly accompanies Fevers. Theſe are two Caſes that have been obſerved to be of fatal Conſequence.

(b) 2. Prog. 4.

There

There is yet another, namely, a *Vicissitude* of *Heat* and *Cold*, coming either on a sudden or gradually: But whatever be the manner of the Accession, it speaks an *Omenous* and dangerous disorder in the Blood and Spirits, an obstruction in its Motion, or at least a Stagnation of it in some of its Chanels. This *Vicissitude* of *Heat* and *Cold*, is to be considered, with respect only to continual Fevers, and Pulmonary Distempers. For, that which happens in intermitting ones, are more easily check'd and controul'd by the *Peruvian Bark*, and other *Febrifuga*, to the unspeakable Benefit of Mankind.

SPONTANEOUS WEARINESS, and the *Position* of the Body in the disorders of it, may seem to be of small Moment. But, that they may deserve some consideration in the *Prognosticks* of Diseases, will appear in the Sequel. Not to mention that 'tis often a Forerunner to some acute Distemper, (*c*) as every one must know, that is but moderately skill'd in the Nature of Humane Body. It sometimes seizes all the Parts, especially the Musculous and Cutaneous Ones, sometimes the Back in acute Diseases, and sometimes the Spleen, Belly, the Midriff, and Stomach, and sometimes the Arms, Thighs and Legs, and as it seizes different Parts, so likewise at different times, as at the Beginning, and sometimes at the heighth and declination of the Disease.

(*c*) Aph. 5. § 2.

WEAKNESS and *WEARINESS* are manifestly different; For the first is owing to a defect,

defect, and want of the motive Faculty. But *Wearinesse* is a certain Passion of Anguish and Uneasinesse, that comes upon violent Motions of the Body. In animal Motions, a spirituous Juice is instill'd from the Nerves into the Fibres of the Muscles, and the want of this Liquor causeth Wearinesse. Or, this Spirituous Juice is distilled into the Mouths of the Nerves in the Muscles; and therefore when the Spongious *Tubuli* of the Nervous Fibres are once soaked with it, it may be continually supplied without interruption. But, after a great expence of it; those small Vessels come to be exhausted and dried, Leaving a *Wearinesse* in the Place. Thus it is caused by want or obstruction of the Nervous Liquor, by a Lesion of the Organs, and by an *infarctus* or *Plethora* of Humors. Hence it is, that in some acute Distempers, Strength is gone all on a sudden, not because there is want of Animal Spirits, but because their Motion is obstructed, interupted and suspended, and this also may be the reason, that Plethorick Bodies, are soonest affected with the Sense of *Wearinesse*.

But, now to consider it as a *Symptom* of a *Fever*, or some such acute Disease, in which, when it comes upon the Thighs and Arms, accompanied with other good Signs, it tells us that the Morbifick Matter, as was formerly observed of *Pains*, is cast upon those ignoble Parts, and that the Disease tends to a Solution. For, it is then only, that the Patient comes to be sensible of this *Tensive heavinesse* and *wearinesse*, especially, in the Cutaneous

neous Parts, of which, he could have no Sense in the raging height of his Distemper. When the Humours are concocted, and their grosser Parts refin'd, and rendred fit for excretion, they are thrown out, *quâ data porta*, by Sweat, Stool, Urine, *&c.* But, if they reach no further than the milliary Glands of the Skin, there they are lodged, till they be carrried off some other way. For, in the ordinary and natural Motion of *Fluids*, that serve either for nutrition or excretion, there are necessary Passages and Chanels, through which they run easily. But, in extraordinary Cases, as all Diseases are, Nature finds out extraordinary ways, by which it throws out the noxious matter, or at least puts it in a less dangerous place. But after all, a *Spontaneous Weariness*, is a dangerous Sign, when it is accompanied with *Pains* in the *Head*, *Thirst*, *Watching*, *Weakness*, and other like Symptoms, even at the declination of the Disease, and when the peccant Humour is not duly concocted.

The *Position* of the Body, deserves likewise to be regarded and consider'd; For, by it we come to know its vigour and weakness. Tho' Nature be surprising and wonderful in all its Laws and Actions; yet, who is not struck with amazement that contemplates her in the Motions of the Parts of Humane Body? When one is in Health, how surprizingly great is the Power and Energy of his Muscles? How many different Ways doth one manage them at his pleasure? excepting some few, the management of which Nature has

has reserved to her self, as that of the *Heart*. But, upon the Invasion of a Disease, he that could make the Ground tremble under him, is not able to move himself without help, and if he has yet any little Strength, he moves himself into a thousand Postures, endeavouring to be quit of his Pain and Uneasiness. From those various Positions of the Body, we come to know his State and Condition, and the Event of his Sickness.

The *SHIFTING* of *POSTURES*, cannot be ascribed to any thing else, than to the raging Heat, which the Sick Person finds all over his Body, especially in his Breast, occasioned by the excessive Heat in his Blood, and sharpness or irregular Motion of the Animal Spirits. This makes him peevish and uneasy, and sometimes he voluntarily turns himself, this and 'tother way; for ease and mitigation of his Pain. But, he is also sometimes under a Necessity of altering his *Posture* of Lying, by an Irritation and *Stimulus* of the Nervous Liquid, and its irregular flux into this or t'other Muscle.

To inquire, whether the Actions of the Muscles, which are the Organs of Motion be performed by Contraction or Turgency, caused by the influx or Motive Power of the Blood, pression of the ambient Air, impulsive Motion of the Heart or Animal Spirits, would be besides our purpose. Neither shall we inquire how and after what manner, the usual Motions and muscular Actions are suspended and interrupted. Only, it may be ob-

obſerv'd, that there is greater difficulty in lying upon either ſide, than upon the Back, becauſe the Body muſt be ſuſpended, or reſt upon the narroweſt Surface or Point, the Feet, Hands and Head, being alſo accomodated accordingly, ſo that the ſide muſt be the center of Gravity of thoſe Parts. Now, tho' this Poſture is moſt adapted to Motion, or, for turning to the Breaſt or Back; yet to begin and continue ſuch an *Æquilibrium*, as lying upon the ſide is, a greater quantity of Animal Spirits is requiſite, than can be ſuppoſed to be in the Body, or ſeparated from the Blood in time of Sickneſs.

Every Body knows, that the *Poſition* and *Poſture* of lying in time of Sickneſs, muſt be the ſafeſt which approaches neareſt to that which is uſual, in a State of Health; But, this rarely happens in ſome acute Diſtempers, by which the Patients Strength is ſo much diminiſhed, that he muſt lie upon his Back, which is a common and ordinary Sign of great Weakneſs, and the Poſture of dying Perſons, and therefore juſtly ſuſpected.

But, this *Poſture* hath been commended, in as much as it refreſheth the wearied Patient, all the Muſcles being then at reſt from *Tenſion*, excepting thoſe of the Breaſt and Heart: And that, becauſe thoſe in Nephretick Cholicks and other Diſtempers, uſually throw themſelves upon their Backs, and are eaſed by that *Poſture*. Whatever be of this, yet 'tis certain, as was juſt now obſerved, that an involuntary lying upon the Back is a

Sign

Sign of great Weakneſs, and yet more Dangerous, when one cannot turn himſelf to either ſide, and when aſſiſted by others, his Body reſembles a Load or weighty Burthen; or, when his Hand, that unwilling and with difficulty is reach'd to the Phyſician, falls down like a Stone by his ſide. And 'tis needleſs to obſerve how *omenous* it is, when the Head is erected towards the Pillow, it falls backward, diſcovering the Throat and Fore-part of the Neck; or, when the Chin is lifted up, it falls back immediately towards the Breaſt: For, theſe are well known to be certain Signs of inſtant Death; As alſo to ſleep with open Mouth and hanging Jaws; for, both denote an inward Inflamation, or an extream weakneſs, and irrecoverable relaxation of the Muſcles, and disbending all the Springs of the Machine.

CHAP. V.

Of Prognosticks taken from the Pulses.

'TIS now well known that the *Heart* is a *Muscle*, of the same Nature with those that serve to move the joints and other Parts; that it consists of strong Carnuous Fibres, which are easily contracted, but cannot be extended in length, or distracted; that they are swell'd and puft up to a hardness, especially towards its Point, in *Pulsation*, and, that its Motions do not depend upon our Will and Pleasure, that some of its Fibres are external and others internal, both arising from, and terminated in its *Basis*; That, the first sort descend from the *Basis* in a Spiral Line, from right to left, towards the *Point*, where, making a Demi-Circle, return again Spiral ways from the left to the right, towards the *Basis*; and that, the internal Fibres are straight and parallel, descending from the *Basis* to the *Point*, and returning to the *Basis*, in which they are inserted and terminated.

The *Use*, as well as the wonderful *Structure* of this noble *Viscus*, is also notorious, it being the Principal Engine in the Circulation of the Blood, which, being received into its Ventricles, namely, that of the *Vena Cava*, into its *Right*, and that of the Pulmo-

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nary Vein (after having been ſubtilized and attenuated in the Lungs) into its *Left*, is thence diſtributed by the Arteries, to all the Parts of the Body, according to the Laws of its Circulation.

But, to ſuperſede any further inquiry into the Structure of the Heart and Mechaniſm of its Contraction and Dilatation, we are only to obſerve, that the Artery adjoining to it, not being capable to admit and contain all the Blood that's ſqueez'd into it, at every contraction of the Heart: Or, there being a conſiderable diſproportion, between the Capacity of the left Ventricle of the Heart when it is dilated, and that of the Artery next adjoyning to it. 'Tis therefore neceſſary, that, the Membranes of this Artery, notwithſtanding their Firmneſs and Tenſion, ſhould be dilatable, and yield to the *Impetus* and *Truſion* of new Blood at every contraction. Now, the Contractions of the Heart being frequent, neither this adjoining to it, or the other Arteries can ever be emptied. For, the new Blood at every Contraction, muſt preſs upon, and puſh that already in the Arteries, towards their furtheſt Extremities, to be thence deriv'd into the Capillary Veins, for the Continuance of the Circulation.

Now, this Rencounter of the old (may it be ſo called) and new Blood cannot happen, without a notable Reſiſtance and Concuſſion of the Arteries; eſpecially, that adjoining to the Heart, where the Muſcular force and impetus of the Heart is greateſt; there-

therefore, the Impreſſion that's made upon this at every Contraction, muſt be propagated to all the Arteries in the ſame inſtant of time; only with this difference, that the Impreſſion or *Impetus* is always greateſt in their extremity neareſt the Heart.

But, this *Dilatation* of the Arteries at every *Contraction* of the Heart, is of a very ſhort continuance. For, they being dilatable *Tubes*, as was obſerved, are ſwelled and enlarg'd at every *Contraction* or *Pulſation* of the Heart. But, immediately after the Pulſation, they recover their former State, the Portion of Blood that was ſqueez'd into them, being deriv'd into the Capillary Veins, by the Contraction of the Tranſverſal Fibres of the Arteries.

Thus, by a continual and ſucceſſive *Dilatation* or *Contraction* of the Heart and Arteries, is the Vital Fire continued and preſerved. But, the Blood or Liquid that circulates in them, being expoſed to many Impreſſions and Interruptions, both from without and from within; It is therefore conſidered, in all the Diſtempers and Diſorders of the Body (of which it is the great Spring,) as the ſureſt Teſt, by which its State and Condition may be beſt known. For this End, its pulſation in the Arteries is always adverted to, becauſe it points out and informs us what's tranſacted in the moſt retir'd Corners of the Machine; eſpecially in acute Diſtempers, the Chronical ones, proceeding frequently from a Diſorder in the Solid Parts, or, from a vicious indigeſtedneſs and

groſneſs of other Fluids, are not ſo nicely regarded or known as the former, which are more dangerous, and come to their Period in leſs time.

It would be beſides our purpoſe, as well as unneceſſary, (the moſt ſolid Doctrine and finiſhed account of the Pulſes, and differences of them, being already to be had from the Excellent *Bellinus*) to make any further Advances on this Head, were it not in order to have the beſt *view* we can, of their *Prognoſticks*, and what's portended by them.

We are then to obſerve with this great Man, that the Pulſation of the Arterie, be-being a ſucceſſive Contraction and *Dilatation* of it, cauſed by the impulſe of the Blood, and known to us by the touch and Application of the Finger; the difference of the Pulſes, even in a natural State, muſt be owing to the *Contraction* and *Dilatation* of the Heart, the State of the Blood and Arteries. For, when the Heart is contracted or dilated, ſo are the Arteries at the very ſame inſtant, if the contraction of the Heart is *frequent*, ſuch is the *pulſation* of the Artery, if it is Weak and Languiſhing, ſo is the Pulſation of the Artery, and its preſſion upon the Finger hardly perceptible; again, if the Heart move but ſlowly, *i. e.* a more than uſual time is ſpent betwixt one Contraction and another, ſo doth the Artery. Now, that thoſe and many other Changes and Alterations, even in a Natural State, may happen to the Motions of the Heart, according to the different Ages, Conſtitution, Paſſions of the Mind, and Mo-

tion

tion of the Body, *&c.* is very plain. But,

As the different Pulsations of the Artery, is owing to the various and different Contractions of the Heart, so are these to the different State of the Blood, namely, as it is of a greater or lesser quantity. For, supposing a free Circulation, and a great quantity of Blood to be in the Body, 'tis certain, that a proportioned quantity of the whole stock, must be derived into the Heart, when 'tis dilated, and Squeezed out of it by Contraction into the nearest Artery; which for the Reasons above mentioned, must make the Pulsation the greater, and *è Contra*, when there is only a small Quantity of the circulating Blood. And this, besides its various State and disposition, with respect to the Age, Constitution, Season of the Year, Climate, Passions of the Mind, Motions of the Body, before or after Eating, Sleep and Watching. And, Lastly, The difference of the Pulses, are partly owing to the different Capacity and Amplitude, Hardness and Thickness, Tension and relaxation, *&c.* of the Membranes of the Arteries. Thus, when they are narrow, the Blood must make the greater Pression upon their Sides, and the Pulse is the stronger, and *è Contra*, if they are af a greater Amplitude.

Thus far concerning the Causes of the Differences of Pulses in a Natural State: To carry our Inquiries further, or to account for the many and different ways, by which,

the Pulſations of the Arteries may be altered and changed in the diſorders of Sickneſs, would bring us under a neceſſity of inquiring into thoſe, by which, an Indiſpoſition may be brought upon the Blood. But this being inconſiſtent with our preſent purpoſe, I ſhall only obſerve, that whatever it be, it muſt be aſcribed to an Exceſs or Defect of it in its *Quantity*; or, an Alteration in its *Quality*, by an Augmentation or Diminution of its component Parts, or whatever can diſorder their *Coheſion*. The Effects of which upon the Arteries, having given Birth to a Nauſeous and unneceſſary Catalogue of the Differences of Pulſes, it may be proper enough, to retain to thoſe only that are moſt remarkable. And theſe are,

1. With reſpect to Motion, and then the Pulſe is *Swift* or *Slow*. 2. With reſpect to the Blood and *Impetus* of the Heart, the Pulſe is Strong or Weak, *Full* or *Empty*, according to the greater or leſſer Quantity of Blood ſqueezed into the Artery. 3. With reſpect to the Artery, the Pulſe is *Hard* or *Soft*. 4. The Pulſes are *equal* or *inequal*, with reſpect to themſelves, or, one part of the Artery to the other. Beſides theſe, there are other Compound and Singular Differences of the Pulſes, as the *Intermitting* Pulſe, the *Undulatory* and *Creeping*, the *Hectick* and *Convulſive*, &c.

But in ſhort, when an Artery is dilated more than is uſual, the Pulſe is then ſaid to be *vehement* or *ſtrong*. If it be leſs dilated than

than is uſual, 'tis then *Weak* and *Languiſhing*. And if betwixt any two *Dilatations* of the Artery, there is more time perceived than is uſual, the Pulſe is called *ſlow*. And if leſs time is obſerved, 'tis then ſaid to be frequent: Again, if the Tunicle of the Artery, from whatever Cauſe is harder than uſual, it cauſes a *hard Pulſe*, and *è Contra*. Laſtly, an *equal* and *unequal* Pulſe, are only a *Species* of a *quick* and *ſlow* one. For, if either of them be always like to it ſelf, then is it *equal*, and if it be not conſtantly like to it ſelf, 'tis then *unequal* and *intermitting*.

So that the moſt uſeful Differences of the Pulſes, and which fall under the Cognizance of the Phyſician, are, the *ſtrong* and *weak*, *ſoft* and *hard*, *inequal* and *intermitting*, *quick* and *ſlow*. Of the laſt of which we are always doubtful; For, a *ſwift* and *ſlow* Pulſe and the Degrees of it, depending upon the Meaſure of time, can hardly be diſtinguiſhed by the application of the Finger. In one in ordinary Health, and in a Natural State, there are commonly reckoned, three Thouſand ſix Hundred Beats or Pulſes in the Artery in one Hour, and every one of theſe to be equal to a Second, or the three Thouſand ſix Hundredth Part of an Hour, ſo that the duration of the Dilatation of the Artery, muſt be ſo ſhort and inconſiderable, that 'tis known with great difficulty: eſpecially in thoſe who are young, and whoſe Circulation is accompliſhed, in a

very little time, with respect to those of a more advanc'd Age and larger Size.

But, if an Universal Obstruction happen in the smaller Arteries, so that the Blood in them cannot be derived into the Veins, the Pulse is found to be sensibly very *slow*, for, the Pression upon the Artery, in this Case, continues for some time, and likewise that upon the Finger: But one in this State must die in a little time. Again the Pulse comes to be remarkably *slow*, when the Blood by reason of its viscidity, runs with difficulty upon the Surfaces of the Arteries, notwithstanding the *Impetus* of the Heart.

Now, the result of all these Differences of the Pulses, and what they *portend* and *Prognosticate* in those Distempers that are acute, is reducible to these few following Observations.

1. A Pulse that's little or inconsiderably alter'd and chang'd from that which is natural, but is only somewhat more *frequent* and *stronger* in the Beginning of a Fever, tell us, that, it is either a Continual one, of one or more days: Or, that the Fever is malignant. To distinguish the one from t'other, we are to consider if the Pulse be equal, and like to a natural one, excepting that it is *swifter* and *stronger*. For, being accompanied with these Circumstances, it denotes the Fever to be of the first sort, and if it be inequal the Second; chiefly for this Reason, that in a Quotidian or Continual Fever, the Motion of the Blood is only a little greater,

and

and its quantity augmented, *i. e.* rarified, and ſo is the Pulſe proportionably, with reſpect to time, or the number of its Beats upon the Artery, and preſſion that it makes upon the Finger. For, in ſuch Fevers, the *Texture* and *Craſis* of the Blood is not much altered from its natural State, or conſiderably vitiated; only, its Motion is greater than uſual, which, nevertheleſs, may be equal to and conſiſtent with its ſelf, and therefore the *Contractions* and *Dilatations* of the Heart and Arteries muſt alſo be equal.

But in *malignant Fevers*, the Blood is loaded with an unequal viſcidity and fluidity; or, conſiſts of Parts, whereof ſome are ſo tenacious, that, they cannot freely circulate in the Veſſels, eſpecially in the Capillary Veins, in which the Motion is weak and languiſhing; others again are more fluid. But, both the one and t'other ſort, either ſeparated or mixed, in an unequal Proportion muſt Circulate in the Veſſels at different times; ſo that in Malignant Fevers, the tenacious and groſs Humours being thus mixed with the Fluid Parts, may produce the ſame Pulſe that's obſerved in thoſe that are in Health, whoſe Blood conſiſts of unequal Fluids. The Blood therefore of thoſe in malignant Fevers being unequally fluid, and in different Parts of the Body, *i. e.* in the Veins and Arteries, and alſo in different Parts of them, 'tis no wonder, that the Pulſe is ſometimes *ſwift* and *ſtrong*, and at other times *ſlower* and *weaker* than is uſual, that is, that the Pulſe is unequal.

2. A Pulse that's *weak* and *swift*, and by degrees comes to be weaker than usual, and *stronger* after eating, and when the Food is digested, returns to its former State, signifies an *Hectick* Fever. For, after eating, the *Chyle*, raiseth a new Heat in the Blood, and as 'twere inflames it, or quickens the Animal Spirits, and renders them more brisk by the addition of warmer and rarified Blood, which makes the greater dilation of the Arteries, and consequently the stronger Pulse. But, when this little Portion of New Blood comes to be exhausted, the Pulse returns to its former state. Thus it likewise happens in Diseases of the Breast, in which, the *Prognosticks* taken from the Pulse, cannot be affirmed to be certain. For, in those affected with Pulmonary Distempers, nothing departs sooner and more easily from its natural State, than doth the Pulse.

3. An *Intermitting Pulse*, is, for most part fatal, and *Prognosticates* certain Death; yet, in Fevers it is not so dangerous in Children and Old People, as in those of a middle Age. For, in Children the Blood is not yet much refined and attenuated by circulating through the Lungs (which it doth only after the Birth of the *Fœtus*) and consequently is not very equally fluid, and the Animal Spirits being unequally separated from the Blood, the contraction of the Heart, with respect to its self must be unequal, and the Pulse intermitting. And in Old Men, the Chanels

Chanels in many Places are ſunk and flagged, and their ſides fallen together; that 'tis no wonder there ſhould be an obſtruction in their Blood, and ſometimes an intermitting Pulſe. But, it is more dangerous when this intermiſſion of the Pulſe is cauſed by the violence of Diſeaſes, eſpecially by feveriſh ones, in thoſe of a middle Age, in whom the State of the Animal Spirits, which influence and promote the Contractions of the Heart, is beſt known by the Pulſe; ſo that if it be ſtrong and equal, there is ground to hope for a recovery of the Patient, notwithſtanding the appearance of ſome ill Symptoms. But, on the contrary; If the Pulſe is weak, wavering, and intermitting, tho' all other Symptoms promiſe fairly, we are always apprehenſive of it. For, ſuch a Pulſe is commonly the Harbinger of Death.

Could we be allow'd to inquire into the productive Cauſes of this fatal Symptom, 'twere no hard matter, to bring ſuch as are not only ſuſpected, but certain and undenyable. And theſe are (to name ſome of them) a defect, or an Obſtruction of the Animal Spirits in the Brain, intercepting their Flux into the Fibres and Nerves of the Heart. For, the Heart being a Muſcle it muſt neceſſarily be moved by the Concourſe of the Blood and Nervous Liquid, and when this is wanting, it can neither be contracted nor dilated, and conſequently there can be no Pulſation of the Artery. The ſame Effect happens upon a Preſure of the Trunk of the Artery adjoining to the *Baſis* of the Heart,

by

by an excess of Fat or Swelling, and Tumor of the Glands, too much Water in the *Pericardium*, or that which comes from a Dropsy in the Breast, *Polypus*'s which have their Construction from the Fibrous Parts of the Blood, and their *Make* being Oblong and Ramous, numbers of them may happen to be associated in the Heart and other Parts, making Carnuous Concretions, so deeply radicated that they grow to a considerable bulk, and diffuse themselves all along the *Arteries*, Swellings, Stones, *&c.* in the Artery, or Auricles of the Heart, a great Fermentation of the Blood within its Ventricles, a defect or *Plethera* of the Blood, obstructions in the pulmonary Vein, great Pains at the Heart, and Passions of the Mind, and a great many such like. But, to proceed,

4. A *strong* and *brandishing Pulse*, accompanied with other good Symptoms, is one of the best Signs, for it indicates a free Circulation of the Blood, a flux of the Animal Spirits into the Heart, and a separation of them from the Blood; a soundness of the Brain and integrity of its Vessels. For which reasons also, a *weak* and *empty Pulse* is always dangerous, so are likewise the *quick* and *slow* ones: For, the one tells us that the Blood is either exhausted, or that it stagnates in some of its Vessels, or that it is too much dissolved and rendred too fluxible: And the other, namely, a too *slow Pulse* signifies a great *Lentor* or viscidity in the Blood, or an obstruction of its Circulation through its

its Chanels, neither of which can be without Danger.

But here we are to observe, that, a *weak*, *unequal* and almost *imperceptible Pulse* in the *beginning* of a *Fever*, tells us, that it is a continual *Periodical* or *Intermitting* One, chiefly because all continual Periodical Fevers, may be consider'd as compounded of many intermitting Ones; or, rather because they proceed from an unusual viscidity in the Blood. In the beginning of a Paroxism, when this Humour invades the small Arteries of the extream Parts, as are those of the Brain, only a small Portion of the Animal Spirits can come from thence, for this reason, the Contraction of the Heart must be the weaker, and the *Pulse* almost *imperceptible*: But because there is always some separation of those Spirits more or less according to the viscidity of the Blood, therefore, in those Fevers the Contractions of the Heart must be sometimes *weak*; sometimes *quick*, and sometimes *slow*. Of this Nature also is the *Pulse* of *Scorbutick People*; especially, when they are affected with a sort of an intermitting Fever, in the Declination of which their *Pulse* is *weak*, *slow* and *unequal*; in the *Status* of it is *brandishing* and *hard*, and sometimes *quick*, *weak* and *unequal*, that one would think, the Sick could not live a few Hours; but when the fit is over, the Pulse is like that of one in perfect Health.

Lastly,

Lastly, A *hard Pulse*, signifies a *hardness* in the *Artery*, caused by its thickness, *Tension* or Dryness, if these Circumstances be owing to Nature, there is less danger than when the *Tension* proceeds from a Stuffage of Blood, or any other fix'd and hard Matter in the Artery. A *hard Pulse* occasioned by want of moisture or dryness of the Artery, is a Sign of Heat and Inflamation, and of *Pleurisies* when the Artery is much distended, and the vibrations strong tho' there be no other Signs.

But after all, tho' amongst all the Animal Actions, by which we inquire into the State and Strength of the Sick, none is of so much Regard and Concern as that of the Pulse; yet, many of its Signs being only probable, chang'd and alter'd by very slight and sometimes hardly observable Circumstances, we cannot be cautious enough in our Observations or *Prognosticks* concerning them; especially, in acute Distempers, which, many times by false Auguries, expose the Physician to no small Reproach and Contempt. It may not therefore be improper to advert to a few things here subjoin'd, not to invalidate what hath been said concerning the Pulses, but to make us the more Circumspect and Cautious in forming our *Prognosticks* concerning them.

We are not then to think that the Pulses do always and certainly point out to us the State and Condition of the Sick, the Quantity and Quality of their Blood, and the *Impetus* of their Heart, *&c.* For nothing is more

more obvious than to ſee the natural Pulſe of one Man to be plainly different from that of another: The contraction of the Heart in ſome being more *powerful* and *ſtrong*, in others *ſlow*, and in a third ſort *quick* and *frequent*, and a thouſand the like; not to mention the different Ages, Sex, Conſtitution and the *Sex non-naturalia*, &c. And,

It ſometimes happens, that, there is an extraordinary conformation of the Artery in the Wriſt, to which we moſt commonly apply, when we inquire into the Nature of the Pulſe. Thus, it may be very hard, or be turned from the moſt common and uſual Place, and therefore occaſion no ſmall Alteration in the Pulſe. In ſome, this Artery hath been ſo ſmall, that it could hardly be perceived. In others, it hath been found in the Back of the Hand, between the Thumb and the foremoſt Finger, (and not at all in either of the Wriſts) perceptible, not only to the Finger, but alſo to the Eye. And ſome have had it in the back part of their Thumbs. Again, Some who have loſt much Blood by being wounded in the Arm or Wriſt, ever after have had a more languiſhing Pulſe in that Part, than in the other. And ſome without any Wound or Hemorrhage have had a ſtronger Pulſe in one Wriſt than in the other.

Neither is it improbable, that, *clots* of *Blood*, *Worms*, or ſome ſuch thing in the Artery, may ſo confound and alter the Pulſe in one Arm, that it may be quite different to that of the other; or, that there may not be

be some *impostbume*, or disorder near the axillary Artery, or Lobs of the Lungs, while the Heart is sound and entire. But that which is most observable, is, that there may be an intermission of the Pulse, tho' there be no intermission in the Contractions of the Heart. We have seen that the Pulsation of the Arteries, is owing to the Contraction of the Heart; yet, it often happens, that, the Heart is found to be Contracted, when there is no *Dilatation* of the Artery, there being little or no Blood thrust into it from the Heart. So that a quick and strong Pulse; *v. g.* doth not always proceed from the State of the Blood. But sometimes also from an extraordinary irritation of the Heart, manner of its Situation, and other such like Circumstances, Convulsion of the Arteries, Passions of the Mind, exquisite Pains, and a *Plethera* of Blood, *&c.*

Neither must we always have a good Opinion of a *Laudible Pulse*, or, altogether condemn a *weak* and *unequal* one; especially, in the Paroxisms of exquisite Pains in the Head, and of the Cholick, *&c.* in which, the Pulse is often very *weak* and sometimes *intermitting*, tho' a brisker one appears after the Paroxism. Therefore in these and other like Cases, nothing that's certain can be known from the Pulse alone, or *predicted* concerning it in this or t'other Patient, unless we know what it was in its Natural State, which seems to be

be very difficult, as well as impracticable, the Phyſician being obliged to give his Advice to all known and unknown. Beſides that, 'tis a Thouſand to one if ever he inform himſelf of the Strength, Frequency, Equality, Order and Tone of his Patients Pulſe, as it was in a natural State, and when he was in Health. Again,

It hath been often obſerved, that, ſome have died when their *Pulſe* hath been indifferently *ſtrong* and *equal*, &c. and that others have recovered under a *Weak* and *Intermitting* one; ſo that, the Signs taken from the Pulſes, even with reſpect to the Strength of the Patient, are ſometimes very uncertain; As in Hiſterick Fits and Faintings, as well as in Fevers, in which, ſome have been carried off, whoſe Pulſe hath been little or no ways different from that of one in perfect Health.

For theſe and many other Reaſons that could be added, are the Pulſes to be conſidered with the greateſt Attention, Caution and Deliberation, not only with reſpect to the Strength of the Patient, but alſo to all the Appearances of his Diſtemper, as all the Differences of the Pulſes are conſider'd with reſpect to one another. 'Tis not enough to apply ones Finger to the Artery, as ſome do while their Thoughts are intent upon ſomething elſe; or, to enquire into the Nature of ones Pulſe, when he is not free from all Paſſion of the Mind, and

Mo-

Motion of the Body. Leſt the Alteration that may be made upon it, be aſcribed to the Diſeaſe. Neither is it proper or commendable to feel ones Pulſe at the firſt approach. For it often happens, that not only Women and Children, but others alſo, have ſome Commotion in their Minds, more or leſs, at the approach of the Phyſician, whoſe Prudence and Conduct ſhould lead him to conſider the Nature and State of his Patients Pulſe, not only in both Arms, but alſo at different times.

CHAP.

CHAP. VI.

Of Prognosticks taken from the Urine.

THE circulating Blood, being the great Spring of the Animal Machine, and the active Principle, by which all its Actions and Motions are exerted, it must therefore be of a certain and determin'd *Crasis*, limited Quantity, Motion, Proportion, and diversity of its Component and Constituent Parts. And no less necessary is it, that it be continually supplied, by reason of the constant Expence and Consumption of it in Animal Motions. Besides, that its Nature and Constitution implies a necessity of Dissolution, and if it be not daily repair'd, it would soon become vapid and unactive, and our Bodies should soon lose their Form and Figure, and die at last, when the Vessels and Liquors in them, is spent and exhausted. For, if according to *Sanctorius*, we perspire Fifty Ounces in the space of Twenty four Hours, how soon would the Stock be quite spent, without daily reinforcement? or, regaining as much perspirable Matter, *i. e.* the Produce of the third Concoction of our Food and Nourishment, which is separated and diffus'd from our Bodies by the *Viscera* and Cutaneous Glands into imperceptible *Effluvia*.

This daily reparation of our Blood is owing to the Food and Nourishment we take into our Mouths, where 'tis broken by the Teeth and moisten'd by the Spitle, and thus descends into the Stomach, where 'tis bruised into a Cream or Pulse, which we call *Chyle*, and in this State is thrust into the Intestines, by the muscular Force of the Stomach, and at last (not to trace it further) by a wonderful Artifice and Contrivance, into the right Ventricle of the Heart, where it begins to be chang'd into Blood.

But, for this purpose, our Drink is equally necessary with the solid part of our Food, that the gross and unactive *Chyle* should be rendred the more fluid to be admitted into the Veins and *Vasa minima* and continued in Circulation for the Nutrition of the Parts. Now when these Ends are accomplished, the remaining part, being unnecessary and useless, is separated from the Mass of Blood in the Reins, convey'd into the Ureters, and voided by the *Urethra*. Not by an imaginary Fermentation, or a pretended Magnetick Vertue and Attraction in the Glandular Reins, but more probably, and consistent with the Animal Oeconomy and Laws of Mechanism, by the impulsive Motion of the Blood through the Emulgent Arteries. For, by this impetuous Motion, its Parts are divided and separated, especially, those more Liquid ones of the *Serum*, which are driven into the Pores of the Glands of the Reins, from whence they are distilled and ouzed in-

to the *Pelvis*, and thence into the Ureters and Bladder.

But, be it as it will, This is the *Serum* or *Urine*, the *inspection* of which is so usual, in order to know the State of the Sick, the Nature of Diseases, how long they will continue, and what will be the *Event* and *Issue* of them.

But, for as much as this Matter implies a necessity of inquiring into the *natural State* of *Urine*; or, what it naturally ought to be in its *Substance*, *Quantity* and *Quality*; we are therefore shortly to observe, that, by the first is to be understood a certain Consistence in the *Urine*, that it may be almost as fluxible as Common-Water, only with this difference, that it is more or less such, as it is loaded with more solid and gross Parts, which, only after excretion are discovered in the *Contents*, either upon its *Surface*, in the *middle*, or at the *bottom*. And the last of these, called *Sediment*, should be of a *whitish Colour*, *Light* and *Equal*, of an indifferent *Quantity* and without *Smell*. Of the same Nature also are the other sorts of *Contents*, namely the *Nubeculæ* and *Eneoremata*. For, these likewise are *Sediment*, only they consist of finer Parts.

Now, tho all these are natural, and commonly observed in the *Urine* of those in a State of Health; Yet, they are vastly different with respect to the *Sex*, *Age*, *Constitution*, and *Season* of the Year, *&c.* Thus the *Urine* of those of a *hot Constitution* is *thin*, of a *small Quantity*, and *high Colour*.

And quite otherways with those whose *Constitution* is *Cold*. The *Urine* of *Women*, is not of so high a *Colour* as that of *Men*. But, 'tis loaded with *grosser Sediment*. In hot Climates, the *Urine* is thinner and higher Coloured and hath less Sediment, than in the Colder Regions. The same difference is to be observed in Summer and Winter. Nay, it is altered and changed every Hour, according to the Heat and Cold, Rest and Labour, Anger and Sadness, the Nature of the Food, before and after Child bearing, Fasting and Eating, Watching and Sleeping, and a Thousand the like.

But its Nature, and the Principles whereof it Consists, is best known by its *Analysis* either *Chymical*, or, by the more vulgar Experiments made upon it by *Evaporation*. For, we find that its solid Parts are *Salt* and *Earth*, or a *Dusty Sediment*. And if it be dried upon a Glass or any transparent Object; we see by the *Microscope*, that, this *Salt* represents the *Figures*, of *Vitriolick*, *Alumenous*, *Tartarous*, *Nitrous* and *Common Salt*. Which, when it is mixed with the watry Part of the *Urine*, takes place at the bottom, or, swims in the middle, and its finest Parts appear near to or upon its *Surface*, according to their *Gravity*, a little time after it is voided, and hath lost the Motion or *Impetus* it received from the Blood in its Circuit.

Hence it is, that we cannot know what are the Contents of *Urine*, or make any just observations upon't; unless the Vessel or Urinal be kept without Motion for some time,

and

and also from Heat, *i. e.* A Heat which is greater than that in Summer, and from too great Cold, or that which is greater than in Summer Nights. For, an *Excessive Heat*, promotes the confus'd Motion of the *Salts* and *Earth*, and *Cold* suddenly congeals them, before they can either be Precipitated or Separated, so that the *Urine* must be always muddy and troubled.

Again, the *Colour* of *Urine*, is altogether owing to the *Proportion* of *Salt* and *Earth*, or *Tartar* mix'd with its *Aqueous* Part, so that, if there be little or nothing of those in the *Urine*, its *Colour* must be like that of *Water*, and when there is some considerable quantity of them, especially of *Earth* and *Tartar*, which is an *Opacous* Body, the *Urine* must be the darker and more blackish, and where there is only a small Quantity of it, and a due proportion of *Salt* and *Water*, it must be like that of one in Health, *i. e.* not altogether Watry, but of a *Yellowish* or *Citron Colour*. But, tho' the Colour of *Urine*, be chiefly owing to an Alteration of its Constituent Parts; yet we must carefully observe, that, it is sometimes occasioned by the Addition and mixture of Corrupted and Purulent Matter, Blood, and the like, which, not only alters the *Colour* of the *Urine*, but also that of the *Sediment*; especially, when it resembles *Scales*, *Bran*, *Meal*, and such like. For, such *Appearances* in the *Sediment*, proceed from viscous and purulent Humours, which intangle and thicken the

Solid Parts of the *Urine*. Hence likewise are the *Hairs*, and *Carunculæ*, and *Membranous Sediment*, which must be ascribed to the Disorders of the Reins, Ureters, or Bladder. And, in one word, whatever circulates with the Blood, ouzes or is separated from it, when the Vessels are broken or distended, as are *Bile*, *Sand*, *Stones*, *Worms*, and sometimes the *Blood* it self, not only alters the *Colour*, but also the *Sediment* of the *Urine*.

This being the *Nature* of *Urine*, 'tis no hard Matter to conceive, how many and different ways, it may be chang'd and altered from its natural State, either by the Organs of Secretion, when they are vitiated; or, when there is not a due Velocity in the Blood and Cohesion of its Parts; or when the Constituent Parts of the *Urine* are not broke off, and mix'd with the Blood to be separated from it, in one or all of these Cases the *Urine* must become unnatural, *i. e.* defective or excessive in its *Quantity*, *Quality*, and *Substance*. Now the first of these, being sometimes greater, sometimes less, and sometimes equal to our Drink, and therefore so undetermined, that nothing certain can be affirmed concerning it. It will therefore be more for our purpose, only to consider some of the *Appearances* in *Urine*, and what they *Prognosticate* with respect to the two Last, namely its *Substance* and *Quality*.

First then, *Urine* is sometimes too *thin* and *watry*, which, by what hath been said, is owing to a lesser Quantity of *Salts* and

Earth

Earth than is usual or natural, either because the Particles of those Solid Parts, are too gross to be rendred fluxible and separated in the Reins: Or, because they are not broke off from the Parts of the Body and mix'd with the Blood: But, be it as it will, this *thin watry* and *clear Urine*, in *Fevers*, *Prognosticate* imminent or approaching *Pains* in the *extream Parts*, especially in the *Head*, and tells us that the *Fever* is not an *Ephemera*, in which the Secretions are little altered or vitiated, and therefore is the more dangerous, because the gross Humours come not into the *Reins*, in that quantity that's necessary to take off the Distemper, but is obstructed in the Extream Parts or Capillary Vessels, where the *Impetus* of the circulating Blood is weakest, and at the greatest distance from the Heart.

But this is to be understood only with respect to this *thin Urine* in the *beginning* of the *Fever*; For, if it continue clear, thin, and Watry for some time, the *Symptom* is yet more dangerous, chiefly, because it denotes a Stagnation in the Capillary Vessels of the *Brain*, (where the Motion of the Blood is weak and unactive, of little Power and Force, and easily obstructed) in which when these *Humours* or *Salts* are once fixed, not only the *Urine*, that should have been loaded and impregnate with them, becomes *thin* and *clear*, but also those finer Vessels of the Brain, must be distended and over-stretcht, causing violent and intolerable *Pains*, and at last an *Inflamation*, *Delirium* and *Frenzie*,

in which Distempers the *Urine* is for the most part *thin* and *watry* and without *Sediment.*

This sort of *Urine* is likewise commonly observed to come upon violent Commotions and Perturbations of the *Mind*, and doth not retrieve its natural Colour, till the Passion is quite gone off. And there is no Sign more certain of an imminent *Hysterick Fit*, than when from a *Yellowish*, the *Urine* turns to a *watry thin Colour.* It is likewise a forerunner to *Convulsive Paroxisms*, and in *Spasmodick* Cases, the *Urine* is almost always *thin*, *clear*, and *plentiful*; so that it seems that those Diseases are either produced or fed by the *Salts* of the *Urine.* But, it is yet a more dangerous Sign, if about the beginning or *Status* of a Disease, the *Urine* being *rediſh*, and much loaded with *Salt* and Excrementitious *Contents*, changes gradually to a *Pale* and *thin Colour*, and if the *Pulse* become *quicker*, *weak* and almost *wavering*, if the *Tendons* Start, if talkativeness, fearful Dreams, and such other Symptoms appear.

Moreover, *thin* and *clear Urine*, continuing to be such throughout the whole Course of Chronical Distempers, is always suspected and dangerous. Because, as was formerly observed, the Matter and Humours wherewith the watry Part should have been impregnated, is, after a long Distemper impacted and detained in the Body, that it can neither be concocted or thrown out. But, if the *Urine* is only sometimes *thin*, and at

other

other times loaded with *Sediment*, and again becomes *clear* and *Transparent*, and always inconsistent with it self, it not only *Presages* a lengthning of the Disease, but also *Death* to the Patient, especially in *Fevers*, if this tedious and slow Concoction, and separation of the Humours, happen upon *Critical days*, in which *Nature* should be most vigorous, and make its last effort to throw them out.

Secondly, *Gross* and *thick Urine* being such by reason of its Contents or Solid Parts, that is, the *Salt*, and *Tartar*, or *Earth* mix'd with it, is quite different from the former. For, it tells us that the Peccant and Crude Humours, are more or less dissolved, or fixed in the Capillary and other Vessels, or rendred *fluxible* with the Blood, and separated in the *Reins*, in proportion to the *Quantity* of the Liquid and Solid Parts or Contents of the *Urine* and *difference* of its *Colour*. For, the more that the *Urine* is impregnate with *Humours*, *Salt*, or *Tartarous Earth*, so much less in *Quantity* is the Liquid Part and of a darker *Colour*, and *è Contra*. But, tho' the State of the Blood and Condition of the Sick, is pointed out by the *Contents* of the *Urine*; Yet, it is chiefly to be considered and examined with respect to the sudden or slow Changes and Alterations that are made in it, sometime after it is voided. Thus,

Hippocrates (a) observed, that *Urine* being *clear* and *thin* when first voided, and forthwith becomes *muddy* and *troubled*, signified (a) Aph. 81. § 4.

fied an approaching Concoction, or that it was already begun. But, if it was pissed *muddy*, and continued to be such, like *Horse-piss*, it signified a rarefaction of the Humours, and *Prognosticated* approaching *Pains* of the *Head.* 'Tis true, this last sort of *Urine*, indicates a great Agitation and Ferment in the Component Parts of the Humours, and a partial Coction of them, and in so far there is no better Sign. But, seeing we dont know what the nature of this Concoction is (for, such may happen at any time of the Disease) or how long it will continue, *Predictions* concerning it, must be the less certain, unless some Light be had from the other Symptoms of the Distemper. And that this *Subjugal Urine* should denote some approaching disorder in the *Head*, seems to be unaccountable, tho' the truth of the Observation, hath been sometimes confirmed, especially, when at the same time the *Pulse* is *low* and *weak*, and the Patient is *sleepy*, and affected with a *heaviness* in the *Head.* For, in this Case, a *Lethargy* is not far off. But, on the other hand, if he is restless and inclines to waking, is thirsty and his Tongue parched, it foretells a *Delirium* or *Convulsions.*

Thirdly, A *Light white* and *equal* Sediment, hath always been observed to signifie a perfect *Coction* of the *Humours.* But, if this *Sediment* appears in the beginning of a *Fever*, it tells us that it must be an *Ephemera*, or a *malignant one.* For, in the first, neither the Mass of Blood, nor Secretions

are

are much vitiated, and therefore the *Urine* muſt be like that of one in Health, whoſe *Sediment* is *light* and *equal*, becauſe the Blood circulates equally, *i. e.* its Motion is ſtill the ſame, and it being likewiſe ſuch in *Malignant Fevers*, the *Urine* as well as the *Pulſe* of thoſe in that Diſtemper, muſt be like that of thoſe in Health.

Fourthly, *Rediſh* or *Flame-coloured Urine*, having a *red* and *light Sediment*, in the beginning of a *Fever*, is a Sign of an approaching *Criſis*; eſpecially, if the Fever be continual. For, ſuch *Sediment* muſt proceed from much ſeparated *Salt* and *Earth* (ſuppoſing always that the *Urine* is Plentiful and Copious) which neceſſarily takes off the *Lentor* or febrile Matter of the *Fever*. But, if there be any Signs of an *Intermiting* one, and the *Sediment* reſembles *brick duſt*; Inſtead of a Perfect *Criſis*, there is only a partial one, *i. e.* a true *Paroxiſm* of an *Intermitting Fever*, for ſuch is the *Sediment* of thoſe in that Diſtemper. Add to this, that *Rediſh Urine*, having a *Light Sediment*, is, one of the beſt Signs in *Pleuriſies*. For, the *Colour* indicates a due mixture of the *Liquid* and *Solid Parts* of the *Urine*, and the *Light Sediment* a laudable Separation, both which fairly promiſe a ſpeedy Recovery, and an End of the Diſtemper. And the ſame is to be ſaid of *Greeniſh* or *Yellow Urine*, having a *white Sediment*, for, ſuch *Colours* come nearеſt to that which is *natural*.

But,

But, whatever is signified by the *Sediment*, either *White* or *Red* that falls to the bottom, the same, but with less Certainty is signified by the *Nubeculæ*, which are only a *Lighter Sediment*, and according to the *Gravity* of its Parts, takes place in the *Middle*, or near the *Surface* of the *Urine*. The Appearance of those *Nubeculæ* is a certain Sign of a partial Concoction of the grosser Parts, *i. e.* that Concoction or dissolution of the Humours is commenced. For Clouds in the *Urine* commonly appear before the *Hypostasis* or *Sediment*, which requires more turns of Circulation in the Blood to a perfect and accomplish'd Separation. However, 'tis plain, that, the nearer the *Nebeculæ* or Clouds approach to the bottom, so much the nearer they come to be *Sediment*, which is nothing but a *Nubecula* plac'd at the *bottom*. And if this lighter *Sediment* appear upon those called *Critical* days, in which commonly there happens a notable contraction of the Fibres and Capillary Vessels, there is no more certain Sign of a Solution of the Disease. But, when this or any sort of the Contents come to be Interrupted, so that sometimes there is an Appearance of *Sediment*, of the *Eneoremata* or *Nubeculæ*, and sometimes none at all, it threatens a *Lengthning* of the Disease, the Humours being unequally concocted, or collected in different Parts of the Body, and therefore unequally separated.

Fifth-

Fifthly, *Piſſing* of *Blood*, (than which no *appearance* of *Urine* in whatever diſtemper, is more dreaded, every one being afrighted to look upon this Liquor out of its Chanels) muſt be carefully conſider'd in all its Circumſtances. For, ſometimes it proceeds from a flagginess or weakneſs of the Capillary Veins and Arteries of the *Ureters*, *Bladder*, and *Urethra*, accompanied only with a wearineſs of thoſe Parts without any *Fever*: And in this Caſe, portends no great Danger, providing there be ſome *Intermiſſion*, and the Parts recover their Tone and Vigour. But, if it continue a long time, tho' there be ſome *intermiſſion*, it threatens no ſmall danger, becauſe a *Rupture* of thoſe Veſſels, is juſtly ſuſpected, eſpecially, when this voiding of Blood happens in *Fevers*, and is accompanied with *Pains*. For this reaſon likewiſe, *Bloody Urine* muſt be a fatal Symptom in the *Small Pox*, in which Diſtemper it often happens, eſpecially to Young People, and thoſe in the Flower of their Age. For, the Blood ſometimes rages ſo violently, and is ſo mightily inflam'd; eſpecially, if they have been accuſtomed to Spirituous Liquors; that it breaks its Chanels, falls into the *Bladder*, and is evacuated by the *Urinary Paſſages*.

Sixthly, The *blackiſh Colour* in *Urine* having alſo a *black Sediment*, is a fatal and Pernicious Sign; for it muſt proceed from a Predominancy of the *Solid Parts*, eſpecially of

of the *Earth* and *Tartar*, the *serous* Part being either exhausted or detained in some part of the Body; and when the *Urine* is very much loaded with this *Sediment*, it denotes a Corruption or an irreparable *Relaxation* of all the Parts; and in *intermitting Fevers*, when the *Nubeculæ* are of a *blackish Colour*, it threatens a Quartan Ague, or an *Erratick* Ague. And reducible to this is the appearance of *Oyl* incorporated with, or appearing upon the *Surface* of the *Urine*, in thin Membranes and Cobwebs, which always signifies a melting of the fatter Parts.

Lastly, A *Suppression* of *Urine*, when it proceeds from a *Convulsion* of the *Sphincter* of the Bladder, or the like, always threatens a *Strangury*; but if it be owing to the *Ileon* Intestine, the case is more dangerous, and mortal: For when this Gut presses upon the Ureters or Bladder, and adjacent Parts, the *Serum* cannot be separated from the Blood, or voided by the *Urethra*. Of this nature likewise is the *Suppression* of *Urine* that's occasioned by an excessive *Cold*, whereby the Blood is so much coagulated, or the *Sphincter* so long contracted, that there can be no Separation made of the *Urine*. Neither can that be less dangerous, which comes upon a *Succession* of *Heat* and *Cold* in the Loins, and accompany'd or follow'd by *Sweat*. For, this Distemper must proceed from some Disorder in or near to the *Reins*, as by viscous and mucuous Matter, Sand, Stones, and the like, obstructing the Passage of the *Urine*, and

there

thereupon ſometimes a *Shivering*, and then a burning *Heat* muſt inſue, according to the *Flux* of the Blood into thoſe Parts. And if *Sweat* (which is nothing but the *ſerous* part of the Blood mix'd with the finer parts of *Salt* and *Earth* and caſt out by the Cutaneous Glands) break out upon this *Suppreſſion* of the *Urine*, the Danger muſt ſtill be the greater, becauſe the *Serum*, that's remaining, becomes the more glutenous, thicken'd and leſs fluxible, cauſing intollerable *Pains*, which are follow'd by *Death*.

Now, tho' theſe few Particulars, if duly conſider'd, may, I think, account for the *Nature* of *Urine* and all its *Appearances* and the *Prognoſticks* made concerning it; yet there is no leſs *Caution* to be obſerv'd with reſpect to *Predictions* taken from *Urine*, than was abovemention'd concerning the *Pulſes*. 'Tis commonly ſaid, that of all others the *Inſpection* of *Urine* gives the moſt certain *Signs* to the Phyſician, upon which he may eſtabliſh his *Prognoſticks*, with reſpect to the *preſent* Circumſtances of his Patient's Diſtemper, and the *Event* of it. Thus the Divine *Hippocrates*, (*a*) *Qui vero ſuperfuturos ex morbo, & morituros, eoſque quibus pluribus diebus, & paucioribus perſeverabit morbus, rectè prænoſcere volet, is intelligentia comprehenſam omnium ſignorum doctrinam, æſtimare debet, & eorum vires inter ſe collatas ratione expendere, velut ſcriptum eſt, eum in aliis, tum in urinis, & ſputis, ubi una & pus & bilis tuſſi rejecta fuerint.* He that would form juſt *Predictions* concerning the

(*a*) Præn. p. 46.

the Death or Recovery of his Patient, or how long his Distemper will continue, must have an exact knowledge of all its *Symptoms* and *Signs*, especially those of the *Urine*, &c. that they may be compared with one another. Nevertheless there are some, (*a*) who pretending to be less credulous, or, as they call it, superstitious than others, not only contemn and slight all *Auguries* taken from *Urine* in their daily Practice, but likewise tell us, that there is more uncertainty than Truth in the Observations that are commonly made upon't; and that *Inspection* of *Urine*, tho' consider'd with other *Signs* and *Appearances*, afford nothing that's certain, *i. e.* that all Observations concerning this Excerement may sometimes be probable, but seldom demonstrative, and in one word, that are meer Conjectures. And,

(*a*) Vide Foreſt. de incerto ac fallaci urinarum judicio.

On the other hand, there are a sort of Men, whose base Avarice and cunning Impudence, for a small matter, will impose upon the simple Vulgar, pretending to know the Nature of the Distemper, the Cause and Occasion of it, as well as its *Issue* and *Event*. Nay, they will discover the Sex, Age and Impregnation, and what Member is affected, and tell you where the sick Person lives, and that he was hurt by his Ox or Plough, or had fallen from his Horse; and tho' supinely ignorant of the *Medical Art*, will divine what has and what will happen, prescribe Remedies, and fairly promise to cure incurable Diseases by *Inspection* into their *Urine*, at any Time or Distance, which an honest and ingenious

ingenious Man will never pretend to, being convinc'd that all this requires an exact knowledge of the *natural* and *habitual Urine* of his Patient, without which 'tis no easy matter to know that which is *præternatural*, especially at a distance, and after it hath undergone a thousand Changes and Alterations. Besides, that all in the same Distemper void not the same sort of Urine, by reason of their different Diet and Constitution, *&c.* the *Urine* being, as was above observed, vastly different, even in a State of Health. Add to this, that the different Conditions of *Urine*, whether complex or separate, are common to many Diseases, which are, if not contrary, yet most unlike to one another, and owing to different Causes. Thus a *gross*, *thick*, and *high-colour'd Urine* is voided by those in a *Fever*, as well as by those that are *scorbutick*, or affected with an *Ascites*, &c. The *Urine* of those that are affected with *melancholy Disorders*, *Worms*, *bad Digestion*, and *Nephretick Colicks*, is *pale* and *thin*; and the same *clear* and *watery Urine* presages a *Delirium* and *Death* to those in *Fevers*, but no such thing or danger to those that are affected with the just mention'd distempers. And 'tis to be observ'd, that the *Urine* of those in *Fevers* is inconsistent with it self, and varies more or less, not always according to its proper *Genius* and *Nature*, and in proportion to its Cause, but sometimes, according to the *Conformation* of the *Reins* and other Organs of

Secretion and different State of the Blood.

For these and many other Reasons which might be adduc'd, it may be affirm'd, that *Predictions* and *Auguries* taken from the *Urine*, unless it be consider'd with the greatest care and circumspection, may be uncertain and precarious, not only in *pestilential*, but less *malignant Fevers*, and even in those that are *intermitting*, in *Pleurisies*, *Quinsies*, and other internal *Inflammations*, in which Distempers the *Signs* of Death and Recovery, taken from the *Urine*, have been found to be false and ill grounded. Again, the *same Urine* has given occasion to *prognosticate* both *Life* and *Death*. Thus in *Dropsies* and *pulmonary Distempers*, the *Urine* has resembled that of one in health, while the Patients have been cut off and suffocated in an instant, So that a bare *Inspection* of *Urine*, even in the *presence* of the *Sick*, without comparing and considering all the other Symptoms of his Distemper, will prove a weak Foundation to raise *Predictions* upon. For,

Tho' the *Appearances* of *Urine*, as we have seen, points at the State of the Blood, and Organs of Separation and Digestion, especially in *Feverish* Distempers, with more certainty than any other *Signs*; nay, most part of other Diseases, whether *Acute* or *Chronical*, and their Changes and Alterations, *i. e.* the Crudity and Concoction of the Morbifick Matter, the Increase and

and Decreaſe, or Exacerbations and Mitigations of the Diſeaſe and *Event* of it, may be known by the *Urine*, and therefore the *Inſpection* of it is come to be ſo uſual and cuſtomary. But no leſs regard is to be had to the other Symptoms at the ſame time, that they be compar'd with one another, eſpecially in the morning or at night after the firſt accompliſh'd Digeſtion, and when all the Blood has frequently circulated through the *Emulgents*, which it muſt do in ſeven or eight hours, being always aſſured, that the *Urine* is neither alter'd by *Food* or *Medicines*, the *Urinal* or the *Air*; all which make their ſpecifical Alterations in this *Excrement*, eſpecially the laſt, which, as was already obſerv'd, *congeals* it when it is too *cold*, and *attenuates* it when it is too *hot*.

Neither is *Urine* to be *inſpected* immediately after it is voided, for then it diſcovers nothing almoſt but its *Colour*, ſo that ſome *time* is neceſſary, that its contents may be ſeparated and diſtributed to their proper Places, according to the *Diverſity* and *Gravity* of their Parts, after the Motion that was impreſſed upon them by that of the Blood, is taken off. And when it is too *old*, or long kept, its natural State and *Texture* may be alter'd by a ſupervening Putrefaction, which renders the Obſervations that are made upon't to be falſe and uncertain.

And laſtly, ſome regard is to be had to the Changes and Alterations made upon *Urine* by

Drink and Medicines. For those that are made with *Rhubarb*, *Saffron*, *Worm-seed*, in *Cider* and *Wine*, dy the *Urine* with a *red Colour*, as on the other hand, Small Drink, drunk plentifully with any Acid, delutes and renders it *limpid* beyond expectation. And *Bartholinus* (*a*) observ'd, that *Urine* was made *black* by a liberal eating of Berries, as 'tis tinctured with a bloody Colour by eating the *Ficus Indica*; and the Effects of *Asparagus* and *Turpentine* are well known.

(*a*) Cent. 5. hist. 90.

CHAP.

CHAP. VII.

Of Prognosticks *taken from* Immoderate Watching *and* Sleep.

WAKING and SLEEPING are both necessary in their turns to the Preservation of Humane Life. When those are changed and altered from their natural Order, and exceed their just Limits, by whatever influence, they either become the Cause of Diseases, or are numbred amongst their most dangerous Symptoms. *Watching* is a time of Action, by which the Liquor in the Nerves, tho' often supplied from the Stock and Mass of Blood in the Veins, is diminished and exhausted. For, there can be no Action without *Motion*, nor *Motion* without wearing and impairing the *Springs* and *Organs*. This is notorious in natural *Waking* and *Watching*, but much more so when it comes to be Unnatural and *Immoderate*, as it often happens in some Distempers, in which, tho' the Limbs and Muscles are quiet and at rest; yet, there is a continual *Flux* and *Reflux* of the Animal Spirits in the little Organs and *Tubuli* of the Brain, or are for most part determined that way, if they are not altogether, or much obstructed in their Motion. 'Tis true, that *Lunaticks* will wake a long and incredible time, without any remarkable ex-

Expence of the Animal Liquid, tho' they don't either Eat or Sleep by which it may be repaired. But this may be owing to the Extream dryneſs both of the Liquid and Solid Parts of their Body, that are become ſo fixed, that there can be no *Perſpiration*, and conſequently the leſs Conſumption of the Animal Spirits, or need of Nouriſhment and *Sleep*. Which,

On the other Hand, is a Ceſſation or reſt from all Action, or a voluntary *Contraction* of the *Muſcles*: The Fibres being relaxed and unbended, and the ſeveral Members reduc'd to a quiet *Poſition* and *Æquilibrium* and freed from the Pain and uneaſineſs of Labour and Action. And ſo is the *Mind* from its intenſe Thoughts, Study, Anxiety, Cares and the like, in which, it is imploy'd while we are *awake*. In one word, 'tis by Sleep that Nutrition, Concoction and Inſenſible Perſpiration is promoted, and the *Animal Spirits*, thoſe refined and *Active Particles*, and *little Springs*; ſo neceſſary to the Conſtitution of the *Animal Oeconomy*, are repaired and recruited, and ſtock'd up for the Future Actions and Duties of the *Animal Life*. But to return to,

Waking, which, when it is *Natural* and *Moderate*, quickens the Senſes, and renders them Brisk and Freſh, Diſtributes the Heat of the Body equally into all the Parts; perfects the Concoctions, and promotes the Evacuation of Excrements. But, when it comes to be *immoderate*, it brings a Thouſand Diſorders both upon *Body* and *Mind*.

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The reason of which is plain, if we consider, that when there is an excessive or greater *Heat* in the *Blood* than is usual, it must become the *drier* by continual *Perspiration*; and thereupon the Nerves and solid Parts, (which by a constant supply of Moisture from the Blood, are kept in a due and natural State) must also be the more contracted, dry and less vigorous, to actuate and stimulate the *Muscles* and other Parts, the *Brain* only excepted, where the Extremities of the Nerves and Fibres are most implicated and twisted, and the Liquor in them when in too great quantity, most active and irregular in its Motion, and therefore directly contrary to *Sleep*.

Now, as to the result of this *Symptom* in *Fevers* and acute Distempers, *Hippocrates*'s (*a*) and every ones Reason plainly suggests, that the *Consequences* of it must be fatal. For, as was already observed, *Immoderate Watching* exhausts the Spirits and dries up the Humidity of the Blood and Brain; Generates *Bile*, and inflames it, and when the Liquor of the Nerves is much wasted and consumed; or, supposing it to be only obstructed in the *Brain*, that it cannot *actuate* the *Heart*, the *Pulse* must become *weak* and *low*, and the Fibres and Capillary Vessels of the Brain, after a long *distension* in *Watching*, rendred irreparably *relax'd*.

(*a*) Aph. 3. § 2.

But, notwithstanding, *Continual* and *Immoderate Watching*, has been accounted a good *Sign*, providing that it happen at the increase and height of the Disease, and accompanied with *Signs* of Concoction; or, when the

Distemper tends to a *Crisis.* At this rate, were the Antient Physicians wont to clog their Predictions with Conditions, *Crisis*'s, Concoctions and *Critical* Days, which, after all, were but *Conjectural* and *uncertain*, rendring them secure and idle Spectators of the *Event* of the Distemper, to the irreparable detriment of the Patient. But we need no more to convince us of the Danger of this *Symptom*, than to observe that it is commonly accompanied with *Raving*, a *Delirium*, *Convulsions*, and *Anxieties*, and the like, than which there are no more fatal *Signs* of *Approaching Death.*

We have seen the Advantages of *Natural Sleep* that's brought upon the Body after Waking, Labour, and Animal Motions, tho thereby the Organs are dryed up, and the Animal Spirits exhausted and consumed. But it is sometimes also caused by the pressure of a full Stomach upon the descending *Trunk* of the *Aorta*; by which, the Vessels of the *Brain* must likewise be swelled, or, embouldned; or, as some think by the Accession of new *Chyle.* However it be, 'tis not unlikely that *Immoderate Sleep* is owing only to a greater fulness of those Vessels, or to a Distention of the *Tubuli*, through which the Nervous Liquor runs into the Parts; or, is produc'd in the same manner as that which is *natural*, only in a more eminent Degree, and by a more powerful Cause.

Sleep is commonly ascribed to a *Humidity* and *Coldness* of the *Brain*, by which the Nerves are relax'd and become flaggy, and the

the Liquor of them render'd unactive and influxible. But, in ſome Diſtempers there is a reſemblance of *Sleep* cauſed by Glutenous and viſcid Humous in the Blood, obſtructing the Chanels of the *Brain*; eſpecially, the *Glandules* in which the Animal Spirits are ſeparated from the Blood, ſo that there is no *flux* of that Liquor into the Nerves, and conſequently no *Senſe* or *Motion*. And tho' in this Caſe there happen a *Tremor* or Concuſſion in ſome Part of the Body; yet, this can be nothing but an *unequal Flux* of the Liquid, of the Nerves and Blood into the Fibres of this or t'other *Muſcle*.

What's *portended* by this unnatural and *Immoderate Sleep* is very obvious, if we duly conſider whether it is owing to a *Lentor* of the Blood juſt now mentioned, or to too great humidity of the Brain, in both which Caſes, there is Hopes of Recovery. For the Exceſſive humidity that intangles the Animal Spirits, and the viſcous Humours in the Blood that obſtructs its Motion, may be happily taken off by Nature or Art. But, if *immoderate Sleep* come after long and *immoderate watching*, accompanied with a *Delirium*, an irreparable relaxation and unbinding of all the Nerves and Fibres is juſtly ſuſpected. *Hippocrates* (*a*) condemns *that* Sleep that rather *exaſperates* than mitigates the Diſeaſe, but commends *that* which takes off a *Delirium*. (*b*) The ſame may be ſaid of that which mitigates *Pains*, *Inflamations*, and *Fevers*, and is well diſtinguiſh'd from a dangerous and *fatal Sleep*, by being found

(*a*) Aph. 1. § 2.

(*b*) Aph. 2. 16.

and

and undisturb'd, and if it continues some considerable time, without being interrupted by starting and frightful Dreams of the Dead, of Tombs and Sepulchres, and of their own Death, which sometimes they foretel. 'Tis likewise an ill *Sign*, when the Eye-Lids being set together, the white of the Eye appears, is Pale, Languishing and Stupid, if the Patient has not been accustomed to Sleep after that manner. And when the Sleep is short and soon broke off, the Patient awakes, is *Delirious*, and again *falls a sleep*. And if he does not sleep, but lies still without any Complaint, speaks not but when a Question is asked him, and when his *Pulse* is felt, he draws back his Hand in a trembling Condition, he will certainly *Die*.

CHAP.

CHAP. VIII.

Of Prognosticks taken from Excretions *by* Stool *and* Vomiting.

THE Animal Life depends upon many and different Causes, and an Integrity of all the Parts of the Body; especially, those that are principal, as the *Head*, *Heart*, *Arteries and Veins*, and the Liquors that run in them, namely, the *Blood*, *Chyle*, *Lympha*, and *Animal Spirits*. But, because our Bodies cannot always continue in the same State, its Parts both Solid and Fluid being worn, consumed, and dissipated by continual Motion; there must be a continual Supply of Food for its Reparation, as well as proper Instruments and Vessels in which it may be prepared and made fit for that purpose.

Nature therefore hath contrived the Stomach, Intestins and Glands, in which, by a wonderful Mechanism, our Food is pounded and concocted, and its grosser Parts separated from those that are more fine and subtil, the one for the preservation of Life, and the other as useless to be thrown out by *Emunctories* ordained for that End. But when those Instruments are defective (which often happens) and the Muscular force of the Stomach, is insufficient to grind the Food and make

make a *Chyle* of fine Parts, that which we receive for Nourishment and Reparation of our Bodies, not being duly prepared, is so far from being useful, that it is rather hurtful to us. For, this unconcocted Food or Crudity, entring into the Mass of Blood, renders it viscous, tough, and of a clammy substistance, unfit for Motion and Circulation, and the cause of most Diseases.

Whatever therefore is useless to the Body, or inconsistent with the Blood, must be separated from it, that it may be preserv'd in a perfect State. Hence are the Endeavours of Nature, and the Contrivance of the *Intestins*, *Ureters*, *Salivary*, and *Cutaneous Glands*, and other *Emunctories*, appropriated indeed to their peculiar Excrements, but sometimes common to all or most of them. For in a living Body, all its Vessels are Tranfluxible and Pervious, so that in time of Necessity, not only the thin and *Serous Humours* and Excrements, but also some that are more gross, are transmitted through insensible Passages. Thus,

In a *Pleurisie*, Blood and Purulent Matter penetrate the thick Substance of the *Pleura* and Membrane that cloaths the *Lungs*. In the Cure of a *Dropsie*, a greater Quantity of Water is voided by Stool in one Day, than possibly could be, unless that which is contained in the *Abdomen*, should pierce the Tunicles of the *Intestins*. And sometimes we see, that, even the *Blood* by a strong impulse or obstruction, leaves its Chanels, and runs through all the Ways and Passages of

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Secretion, as into the Cutaneous Glands by *Sweat*. of *Blood*, *Spitting* of it at the *Mouth* and *Noſe*, Evacuations of it by the *Reins*, *Womb*, *Duodenum*, and many other Paſſages, which it finds for it ſelf, when obſtructed in the *Veins*. In the *Jaundice*, we ſee the groſs Liquor of the *Bile* or *Gall*, when it cannot paſs by the *Cholodocus* and *Porus Biliarius*, to be thrown out with the Excrements, finds a way into the Veins and Maſs of Blood, and thence into the *Cutaneous Glands*, where it tinctures the Skin with a *Yellow* and *Citron Colour*, and affects the *Mind* and *Senſes*, with a Thouſand various Repreſentations. An overflowing of *Pituite* by the *Salivary Glands* is reſtrained and caſt out by *Sweat* in the *Cutaneous Pores*. A *Diarrhæa* or Looſneſs can be ſtopt by tranſlating the Peccant Humour into the ways of Tranſpiration, when open'd by *Diaphoretick* Medicines, or raiſing a *Salivation*, both which, are again diverted and reſtrained by *Cathartick* and *Purgatives*.

This being conſider'd, either with reſpect to *Natural Secretions*, or the Effect of *Medicines*, is ſufficient to obviate the Doctrine of *Configuration* of *Pores*, *Attraction* or *Magnetiſm*. For, theſe laſt mentioned are inconſiſtent with Philoſophy, and the Laws of *Mechaniſm*, and the firſt, namely, Configuration of Pores, juſtly rejected and confuted by the Learned Doctor *Pitcairn*, (*a*) chiefly, becauſe, as he has ingenuouſly obſerved, and evidently demonſtrated, that, the Orifices of the Veſſels, Pores of the Glandules, and Parts of the Body with reſpect to their *Figure*

(*a*) Differt. de circul. Sang.

Figure and *Structure*, are different from one another, only, in *Amplitude* or *Lesser* and *Greater Diameter*, and that they are of a *Circular* Form, when dilated, by the impulse of the Liquors that run in, or are separate by them.

This is Evident in all the Organs of Secretion, especially, in the *Conglomerated* Glands of the *Reins* and Liver, and the Conglobate, Milliary and Cutaneous ones, *these* serving to the Secretion of the thiner Fluid or *Serum*, and *those* for that of the Liquids of grosser Parts. For, the Orifices of the one are different from the other only in their *Diameter*. And tho' these Fluids thus separated from the Blood, cannot be said to Circulate with it; Nevertheless, while they are in the Body, they have a constant tho' slow Motion, and the *Secretion* of them whether *in* or *Extra Animal*, is equally necessary with the circulating Blood for the Preservation of Life. For, to *Secretions* too much Augmented or Diminished, most Distempers owe their Origin and Causes, and not to a *Spontaneous Flux* and *Reflux*, Benumedness and Sluggishness of the Animal Spirits.

There is yet one thing to be noted for the better understanding of the following Observations, namely, that as some Humors or Liquids, as *Urine*, *Sweat*, and the like, after they are cast out of the Body, cannot again return into it, so there are others, as the *Bile* and *Phlegm*, which, tho' they be separated from the Blood, and reach to the

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Inteſtins; yet, go no further, but return into the *Lacteal Veins*, (if they be much vitiated) and thence again into the Maſs of Blood. To this, may be owing a great many Obſtructions and *Symptoms* of Diſeaſes, and different Affections of the *Urine*, *Spittle*, *Sweat*, &c. and why the firſt is ſometimes *Bilious*, troubled and full of *Dregs* and *Sediment*, and the ſecond which is naturally *Sweet* and *thin*, ſhould be *Salt* and *Sharp*, and *purulent*, and why the laſt ſhould be *bitter*, and of an ill *ſmell*.

But this having ſome reſpect to the Secretions *in Animali* and Laboratory of the Blood, we return to conſider thoſe that are made *extra Animal*, or Excretions, by *Stool*, *Urine*, *Vomiting*, *Salivation*, *Hemorrhages*, *Sweat* and *Inſenſible Perſpiration*, &c. and what's *portended* by them.

As to the firſt of theſe, its *Neceſſity* is ſo obvious, that nothing can be more; all Obſtructions in the *Primæ viæ*, being always followed with unavoidable Diſtempers: for the preventing of which, *Nature* hath wiſely contriv'd, that both *Stools* and *Urine*, which are more *Heterogeneous* in their Nature, and conſiſt of more ponderous parts than other Liquids or Excrements, ſhould be ſeparated and thrown out by the largeſt Veſſels and Orifices of the Body. And as the *Gravity* of Food in the Stomach, variouſly preſſeth upon its Coats, by which the Courſe of the Fluids through their Veſſels are changed and affected (to which alſo may be aſcribed the Changes and Alterations that

happen

happen in Digestions) so likewise, when there is a Congestion of ponderous *earthy* and *slimy* Matter (as all Excrements are) in the Glandules and *primæ viæ*, the adjacent Parts must be pressed upon, their Functions interrupted, and a thousand Disorders brought upon the Body. But besides the largeness of the Vessels appointed for casting out the *grosser Excrements*, no less necessary were their Structure and Contrivance, their different *Diameter*, and remarkable Length (which commonly is seven times that of the Body) and various Circumvolutions, their *peristaltick* Motion, and *Contraction* of their Fibres from the *Pylorus* to the *Anus*.

The Excrements thus thrown out by *Stool*, being consider'd with respect to the State of the Body, are to be observ'd, whether they be *good* or *bad*, i. e. *crude* or *concocted*, the *Time* when they are cast out, if *copious* or not, and of what *colour*, how long they continue, and what ease the Patient has by them, and what are the *Signs* that accompany them. And here we are to take notice of the *Nisus* of *Contraction* in all the solid Parts, especially that which is evidently perceptible and demonstrative in the *Peristaltick* and *Vermicular* Motion of the *Guts* and *Sphincters*; which when they are not extended or dilated by the solid or fluid Matter contain'd in them, forthwith tend to *Contraction*, as we see happens after going to *Stool*, *Child-bearing*, and when the *Stomach* is *empty*, the *Surfaces* of the *Intestines*, *Womb* and *Stomach*, being brought nearer to one another.

But,

But, when the Fibres of the Inteſtins come to be *relax'd* and *flaggy*, and their *Contraction* is leſs than uſual, or an unuſual quantity of ſolid or liquid Subſtance is contain'd in their Cavity, or whatever be the Alterations, Changes and Indiſpoſitions that may be brought upon them, the Effects of it for moſt part appear in the Excrements.

Hence are the *thin* and *frequent Stools* mix'd with *Gall*, Slime and other Humors in a *Diarrhœa*, voiding of the Meat we have eat or ſwallow'd, very little chang'd and alter'd, ſometimes having a mixture of thin Excrements, and ſometimes having none at all, in a *Lienteria*. In the *Paſſio Cœliaca*, we void all thoſe Excrements in an unuſual Conſiſtence mix'd with *Chyle*; and in a *Dyſenteria* with *Blood*. All which different *Appearances* being owing to a greater or more frequent *Contraction* of the Guts, *Relaxation* of their Fibres, and an unuſal quantity of liquid Subſtance contain'd in the Cavities of the Inteſtins. But,

When the *Inteſtins* are ſound and intire, the *Excrements*, as deſcribed by *Hippocrates*, are *ſoft* and *coherent*, of a *reddiſh Colour*, and *tollerable Smell*, thrown out as at the uſual time in a State of Health, and in a quantity proportioned to the Food and Diet. But thoſe that are *hard* and *black* denote a *Heat* and *Inflamation* in the Inteſtins, and a Conſumption of the *Lymph*; as thoſe that are too *liquid*, ſignify a *Plethora* of Phlegm, crude Humors, and a Coldneſs in the Conſtitution. *Fat* and *viſcous* Stools denote a melting or coli-

quation of the fat and solid Parts, than which there is no *Sign* more dangerous, if they be accompany'd with a stinking Smell, a black Colour, and other like Circumstances, in sharp and acute Distempers, unless this *appearance* be owing to fat and glutenous Food and Nourishment, or thick Phlegm. Again,

The different *Colours* of Excrements proceed from the greater or lesser quantity of *Bile* mix'd with them. This Liquor indeed, whether we consider it in its *saline*, sulphureous and volatile Parts, or with respect to its Origine, Progress, and Motion into the Intestins, seems chiefly to be design'd for separating and refining the *Chyle*. So that if the *Chyle* should not descend into the Intestins, there had been no use for the *Bile*. But when there is too great a plenty of this *Gall* in the Intestins, and at the same time little or no *Chyle*, the Stomach and Intestins must be variously affected with *Nauseousness*, *Spitting*, *Vertigo's*, *Anxieties*, and the *Head* and *Breast*, with *Pains* and *Uneasiness*. Moreover, a more than usual quantity of *Bile* changes the Excrements to a *greenish Colour*, which signifies a redundancy of acid Humors, threatning Death to the Patient, or a lengthening of his Disease, especially if this *Colour*, with a *loathsome Smell*, appear at the beginning of his Distemper. But no Danger is presaged by it to *suckling Children*, whose Excrements are often greenish colour'd by reason of the Acidity and Corruption of their Milk. *White Stools* are owing to Crudities and Indigestion, or an Obstruction of the *Bilious Tracts*, so that

that that Liquor cannot pass into the *Duodenum* (as it happens to those affected with the *Jaundice*, whose Excrements are always *whitish Colour'd*) but is transferr'd into the Veins and Cuticular Glands. Such Stools must be dangerous in all acute Distempers, especially in the Disorders of the Head; and of the same nature are those that are *yellow*, *rusty*, *livid*, *black*, *party-colour'd*, and of a *high Smell*, which for most part denote Death or Diseases of a long standing (*a*).

(*a*) Aph. 23. § 4.

Froathy Stools in a *Looseness*, according to *Hipp.* (*b*) proceed from Pituite or Phlegm in the Head; but more probably from a Mixture of *Bile* and *Pituite* issuing from the Tracts of the *Liver* and *Pancreas*, or the Glandules of the Stomach and Intestins. However it be, such Stools in Fevers are no good *Sign*, but yet worse when they are chang'd into those that are *sincere*, *i.e.* consisting of one Humour and Colour, without any mixture of Phlegm or *Serum*.

(*b*) Aph. 30. § 7.

'Tis an *omenous* Sign in all Acute Diseases, when Food and Eatables are voided without being alter'd and digested; and every body knows the danger of *immoderate Looseness*, because it enervates the Strength, and causeth *Fainting*, *Convulsions* and *Hiccups* (*c*), by draining and emptying the *Viscera* and Intestins, and contracting the Nerves. And on the other hand, *Stools* of a small quantity, and suddenly check'd or stopt, are not only unprofitable, but pernicious, when the peccant Humor, that was cast into the Intestins, recoils upon the Blood; upon which account we find it always dangerous to give

(*c*) Aph. 4. § 5.

a sudden Check by astringent Medicines to *Diarrhæas* or *Dysenteries.*

A *Looseness* is dangerous, when it comes upon the Invasion of any acute Distemper, and continues with it, especially in *Pleurisies* and Distempers of the *Lungs* (*a*); but it contributes to the Cure of an *Opthalmia*, or Inflammation of the Eyes (*b*), and all Diseases of the Head. If it arises, as frequently it doth, from *Grief* and *Passions* of the *Mind*, it is in a manner incurable, if the Cause of the Grief remains: For this sort of *Looseness* uses to be follow'd by an *Erratick Fever*, till the Patient wastes and pines away to Death. And as it is very pernicious in the Diseases of the *Breast*, so likewise 'tis offensive to Women in Childbed, and Children, seiz'd with malignant Fevers. It is always inflam'd by eating of Meat. But if it insues upon a *Delirium*, especially when the Disease tends towards a Concoction, it takes off the Distemper, the Disorder of the Spirits, by which the various *Species* were represented to the *Mind*, being check'd and implicated with the Humors. And nothing contributes more to the cure of *Palsies*, that are owing to phlegmatick or watery Humors, than a supervening *Diarrhæa* or *Looseness*, that's moderate and tollerable: For such must diminish the too great Moisture and Humidity of the Fibres and Nerves by which they are *relax'd*, and their Liquor embarassed and intangled, but an *immoderate Looseness* dissolves and consumes it. For in all *Diarrhæas* there is a vast Expence of the useful and necessary

(*a*) Aph. 16. § 6.
(*b*) Aph. 17. ibid.

necessary Humors, that are cast forth with the bad, and thus obstructs the Nourishment of the Body, because the Food is not converted into *Chyle* for its reparation, but into liquid Excrements, which of all others are the most ponderous and weakening.

Every one knows the fatality of a long continued *Dysentery*, concerning which it may be further observ'd with a late Author, that if one in this Distemper is seized with an Inflamation of the *Tongue*, and a *Difficulty* of *Swallowing*, there is no hopes left; but if he break wind downwards after its absence for some time, 'tis a *Sign* of Recovery. But in a desperate *Iliack Fit*, if a great deal of Wind breaks downward with a Stink, 'tis a Harbinger of Death.

The *Atra Bilis* frequently mentioned by *Hippocrates* (*a*), and which he condemns as a mortal *Sign*, being cast out by Vomiting or Stool in the beginning of Diseases, such as *Dysenterys*, and in one word, in whatever Distemper, seems to have been an Humor peculiar to *Greece*. And tho' the Excrements in more Northern Regions, in some Distempers are sometimes *yellow*, *livid*, and of a *rusty Colour*, of which above; yet, that these Colours are owing to a certain quantity of *Bile* mixed with them, seems to be very plain: For the more of *Bile* that's mix'd with Water and Phlegm, the Colour is the more *yellow*, and the less there is of watrish Phlegm, 'tis the higher colour'd, and tending to Blackness; and when the Blood is destitute of its due proportion of *Serum*, blackish

(*a*) Aph. 22, 23, 24, § 4.

and deep or pale colour'd *Bile* may be generated and mix'd with the Excrements. Besides, that the Colour of Excrements may proceed from Medicines, Food, or crude Humors a long time lodg'd in the Intestins.

Upon this score, in forming just *Prognosticks* from the *Stools* of the *Sick*, a due regard must always be had to the *Food* and *Medicines* that have been administred, because both the one and the other very often change and alter the Substance, Quantity and Quality of the Excrements, imposing upon the unwary, who take those that are natural to be quite otherwise. Thus we see, that from eating of *Onions* or *Garlick*, their peculiar and nauseous Smell is very perceptible when vomited up. Potions of *Senna* yield *mucuous Stools*, Medicines of *Rhubarb*, those that are *yellow*, *Pulp* of *Cassia*, and Preparations of *Mars*, or Pouder of *Myrtle-berries*, dy the *Stools* of a *black Colour*. And lastly, whatever the Distemper be, especially if it be a Feverish one, we must carefully consider, whether this Evacuation by *Stool* be *Critical* or *Symptomatical*; for according as 'tis this or that, so is our *Hope* and *Fear*. But after all, we are not to think that all *Critical* Evacuations are follow'd with Recovery, or are Salutary, seeing all *Crisis*'s are not such; and therefore the Doctrine and Precepts concerning them must be the more cautiously apply'd: For it hath been often observ'd, that some, after *Critical* Evacuations, have expired in a little time, and others have recover'd, that have been brought to the last

Breath,

Breath, by *Symptomatical* Excretions and Evacuations; of which, in the next place is

VOMITING, which lies under the same Rules with *Excrements* by *Stool*, and not only contributes to the discovery of the respective Nature and Causes of Distempers and Indispositions, but also to indicate their *Event*. But *Vomiting* is not here consider'd as *Periodical*, happening at certain times, as once in the Month, or once a Week, or every day, as I have observ'd in some, without any uneasiness and detriment to the Patient; nor as is it *Artificial*, and *procur*'d by Medicines, or any external Cause, as Stroaks or Falls, contagious or venemous *Air*, noysome Smells, violent Exercises, going to Sea, Surfeits and hysterick Fits, and the like; but as it is produc'd by some internal Cause, *Symptomatical* or *Critical*. In order to which, 'twill be requisite we should observe, that

Whensoever any unnatural *Juices* or *Humors* are generated and congested in the *Stomach*, or strain'd into it from the *Glands*, we have not always a *Sensation* of it, like that of *Hunger*, unless they be of that nature to affect us as *this* doth; and therefore as the *Humors* are *viscous*, *acid*, and *corroding*, or so powerful to insinuate themselves into the Membranes and Coats of the *Stomach*, such is the *Sensation* excited by them, and is sometimes only a slight twitching, but then more gnawing and cutting, *&c.* causing *Pains*, *Heart-burning* and *Hiccups*. Now for the production of these Effects, no Hu-

mor it more powerful than that of the *Bile*, whose Parts being remarkably *Salt*, *Sulphureous*, *Acid*, and *Volatile*, are easily derived from the *Duodenum* into the Cavity of the Stomach, and its most Volatile Particles diffused upon the *Surface* of the *Oesophagus*, first occasioning an Aversion to Food, and then a *Contraction* of the Stomach, or a sudden *Convulsion* of it, by which whatever is contained in it, is thrown out by the Mouth in *vomiting* or *wreaching* only, if the Stomach be empty. But, as *Vomiting* is thus caused by plenty of unnatural *Humors*, especially that of *Bile* congested in the *Stomach*; so likewise by an embowldning of the Arteries and other Vessels pressing upon its Nerves, or by a greater than usual quantity of Spirits derived into the Muscles of the Stomach, which necessarily must cause a sudden *Convulsion* and *Contraction* of it. Thus it happens in a long *Paroxysm* of *Vertigo*'s, exquisite Pains of *Nephretick Collicks*, and other Distempers.

I propose not to my self to account for *Vomiting procur'd* by *Emeticks*, or to determine, whether in this case, it be owing only to an *Irritation* or *Stimulus* of the Coats of the Stomach, or to an *Attraction* (so to speak) of Humors into it from the adjacent Parts. But 'tis certain, that the *Effects* of *Vomiting*, whether *natural* or *procured*, are very extensive towards the preventing of many Distempers: For, besides the freeing the *Stomach* from any oppressing Matter, which 'tis very apt to congest, and which, whilst lying there, perverts

verts Digeſtion, either by hindering the Eruption of, or allaying and depraving the Liquors that *ouze* into it from the glandulous Coat for promoting Digeſtion; the *Irritation* and *Concuſſion* extends not only to the Glandules and Nerves of the Stomach, but by conſent of the whole Nervous Syſtem, to thoſe all the Body over, whereby they are contracted to the diſcharging of whatever loads, or is diſagreeable to them.

Thus the Body is diſcharg'd of its Impurity by a nearer and more expeditious way of Evacuation, than by the various and ſlow Turnings of the *Inteſtins*. And nothing is ſo conducive to render the viſcous Humors impacted in the *Viſcera*, fluxible, to take off Obſtructions, and the moſt hidden and latent Cauſes of Diſeaſes. For, by ſuch a violent *Concuſſion* of all the Parts of the Body, the *Inteſtines* are ſtimulated to diſcharge their Impurity by *Stool*; the Liver and *Pancreas* by the *Cholodocus* and *Porus Biliarius*; and the *Spleen* probably diſchargeth its Excrement into the Stomach by ways yet unknown to us; the *Reins* their *Serum* by the *Ureters*; the *Lungs* their *Mucus* by the *Windpipe*; the *Brain*, *Palate*, *Noſe* and *Eyes*, throw forth their Pituite and Salt *Serum*, and the whole Body by *Sweat* and *inſenſible Perſpiration*.

But notwithſtanding all theſe *Advantages* of *Vomiting*, whether excited by Art or Nature, in ſome caſes hereafter to be mentioned, nothing is more dangerous, or attended with more fatal *Events*. By *Art*, when *provok'd* in thoſe that are very young, or whoſe Weakneſs

Weakness cannot bear such a Tumult and universal Evacuation. Neither is it safe in Spitting of Blood, Consumptions, Hæmorrhages at Nose, or when there is any internal Apertion of the Veins, and such like. But now of *Spontaneous Vomiting.*

When *this* comes upon a long continued *Looseness*, the Disease goes off in a little time (*a*), but 'tis quite otherwise, when it comes upon a *Dysentery*; and no less unlucky is a *bilious Vomiting* in the beginning of that Distemper. Matter of a *rusty*, *livid*, *black* and *leek-colour*, vomited up with a *stinking Smell*, are said to be mortal, and *Hippocrates* in his *Epidemicks* gives us many Instances of it; but after all, they seem to be only some particular Cases, accompany'd with other grievous *Symptoms*: For we see such colour'd Matter often vomited up without any danger, especially in *Hysterick Fits*, which upon this account have been taken for a *bilious Colick*, or the *Iliack Passion*; the Matter vomited up being of the colour of Herbs. And in *Sea-sickness*, such colour'd Matter has been cast up from the Stomachs of those in perfect Health. The like is commonly observ'd in the Excrements of Children in *Convulsive Fits*, when voided either upward or downward. The *black Colour* in *Vomiting* is indeed a most *dangerous Sign*, being caused by a Relaxation of the *Viscera*, and as 'twere a *Palsy* of the whole Body, and threatens approaching Death. But if this happen to those that are young, and to Old Men, whose solid Parts are naturally loose and

(*a*) Aph. 15. § 6.

and flaggy, the greater is the hope of Recovery, and of eſcaping from the threaten'd Danger.

The *violent Vomiting* in the *Iliack Paſſion* muſt needs be mortal, becauſe it ariſes from the inverted and prepoſterous Motion of the *Inteſtins*, and their Fibres, which ought to be contracted from the ſuperior towards the inferior, but in this Diſtemper are contracted to the ſuperior: So that whatever is contained in them, is vomited up at the *Mouth*, contrary to the wonderful Contrivance of Nature, which hath form'd the Folds and Circumvolutions of the Guts in the moſt fit and conducive Order to carry the *Fæces* down to the *Anus*. Here it may be obſerv'd, that ſometimes in the *Cholera Morbus*, when *Vomiting* is unſeaſonably ſtopt, either by *Opiats* or *aſtringent Medicines*, a worſe Train of Symptoms follow: For the ſharp and corrupted Humors being repelled, exert their Fury and Force upon the Blood, or are mixed with it; and thus ends in a *Fever*, which is equally dangerous with the Diſtemper.

Vomiting of *Blood* is always dreaded, and attended with Danger (*a*), eſpecially when it comes from the *Lungs*, or an Apertion or Corroſion of the *Sanguiferous Veſſels*; yet this *Symptom* hath been ſometimes *critical*, and beneficial to the Patient. Thus Women have ſometimes *vomited Blood* in the *Suppreſſion* of the *Menſes*, in which caſe it is not to be ſuddenly ſtop'd, unleſs the quantity vomited up be greater than is uſual in its natural Courſe. But more of this when we come to ſpeak of *Spitting* of *Blood*.

(*a*) Aph. 25. § 4.

CHAP.

CHAP. IX.

Of Prognosticks *taken from* Salivation, *and* Spitting *of* Blood.

WHilst the *Chyle* is only in the *Stomach* and *Intestins*, 'tis said to be *extra Animal*, and when it is receiv'd into the Lacteal Vessels; its State and Condition is but little different from what it was in the other, except that 'tis a little more refin'd in the *Glands* of the *Mesentery*, for, as yet it is *Salt* and of a *whitish Colour*. But, by the Accession of the *Lymph*, 'tis rendred thinner and more Fluxible to pass into the Subclavian Vein. And it's last State is in the Veins and Arteries, where after some Hours, it looses its Colour, and is purged from the greater Part of its *Salt*.

But this deluting of the *Chyle*, seems not to be the only use of the *Lymph*; For some of its Vessels discharge this Liquor, not only into the *Thoracick Chanel*, but also immediately into the Veins. Some come from the *Viscera*, and the Glands of both Sorts, namely, the *conglobated* and *conglomerated* ones, from the first, the *Lymph* is carried into the Veins, and from the last into particular Chanels and Cavities, as into the *Eyes*, the *Mouth* and *Duodenum*, &c. And tho' their Number be infinite, and in every Part of the Body,

Body, and their Orifices like to other Chanels; *i. e.* of a Circular Form. Yet, those that are most remarkable, are the *Salivary Vessels*, which come from the *Parotides*, and Maxillary Glands, in which, the *Lymph* or *Spitle* is filtrated, before 'tis received into those Vessels, which terminate in the *Mouth*, under the Point of the Tongue and Lower Grinders, Palate and *Oesophagus*.

And as the *Lymph* thus serves for a Conveyance to the *Chyle*, until it enter the Veins, and there also delutes the Blood; so is it also separated from the Blood, that there may be a continual Stock of it for proper Ends and Purposes. And if we consider the vast Number of *Salivary Glands*, and the great quantity of *Lymph* or *Spittle* that's continually emptied into the *Stomach* and *Mouth* (not to mention its *Principles*) we must be convinc'd, that Nature never design'd this Liquor but for the noblest Uses. But, on the other hand, when it comes to be superfluous, *i. e.* when there is more of it than is necessary to delute the Blood, *&c.* or, when 'tis obstructed and loaded with *Heterogeneous* parts, we are not to wonder it should be the cause of so many and different Distempers as are abscrib'd to it. For,

Nature hath design'd, that this as all the other *Liquors* and *Juices* of the Body should be of a Determinate *Quantity*, and the Superfluous part to be cast out *quâ datâ portâ* by Stool, Urine, Sweat, insensible Perspiration and *Salivation*. But not being carryed off by either of those ways, it swells and em-

embouldens its Vessels, occasioning *Rheumatisms* and *Gout*, and sometimes to that bigness, that at last they must break and terminate in *Dropsies*. Or, it takes place in the finer Vessels of the *Brain*, fills and stuffs its Glandules, relaxeth its Fibres, intangleth the subtil active Parts, or those called *Spirits*, makes them sluggish and unactive, or obstructs the generating and separation of them from the Blood, and thus causeth *Lethargies*. Or it distils into the Pulmonary Vessels where it thickens, becomes viscid and hard, and productive of a Thousand Disorders.

'Twere endless to recite and account for all the Effects of a *vitiated Lymph*, and alien to my Purpose to adduce the Causes to which it is ascribed, such as are a Coldness in the Blood and Constitution, an obstructed Perspiration, cold and watry Meats and Drink, cold Weather and thick Air, excessive drinking of Spirituous Liquors, want of Exercise and Excessive Venery, and the like. We are therefore to *view* it as it falls under the Denomination of *Saliva* or *Spittle*, and consider it with respect to its thinness, thickness and viscidity. And as it is *equal* or *round*, *frothy*, *bloody* and *putrified*, as it is *white*, *pale*, *yellow*, *reddish*, *livid*, *black*, and of a *mixed Colour*, as its *Smell* and *Tast* is *stinking* or *insipid*, *sweet*, *bitter*, or *acid*, and cast out with *ease* or *difficulty*, and what's *imported* and *presaged* by it under one or more of these Circumstances.

First

Firſt then, we never have a bad Opinion of *Spittle*, that's *white*, *light* and *equal*, and when it is neither too *thick* nor too *thin*, but eaſily hawk'd up without *Pain* and a *violent Cough*; nor of that which appears upon the firſt Invaſion of Diſeaſes of the *Breaſt* and *Lungs*, (*a*) eſpecially in *Pleuriſies*, tho' it be *rediſh* by reaſon of a mixture of Blood and Pituite; For ſuch *Spittle* is caſt up in that Diſtemper to the Advantage of the Patient, if it Commence before the fourth Day, but after that time his Strength is often exhauſted, and the Spittle comes to be ſo much thickned, that it cannot be eaſily brought up, and thus inflames the Diſeaſe; ſo that not only in this Diſtemper, but alſo in Inflamations of the *Lungs*, 'tis a dangerous *Sign* when the *Spittle* is *white*, and altogether of *Phlegm*, like that of thoſe in Health, for it tells us that the Peccant Humour is yet lodg'd in the *Breaſt*.

(*a*) Aph. 12. § 1.

Again, as long as Feveriſh Perſons *ſpit*, they are out of Danger in continual, as well as intermitting Fevers. So it is with thoſe that are *Pthiſical*; for they live as long as they can *Spit*, and die when it is ſuppreſs'd, the *Salivation* being follow'd with *Strangling* and *Snorting* in the *Throat*, occaſioned by the viſcidity of the impacted Matter in the *Lungs*, ſo that upon this account, or want of Strength it cannot be hawked up and expectorated, but in a little time muſt end in *Suffocation* and *Death*. The like Symtom often happens in *Aſthmatical* Paroxyſms but with leſs danger.

When

When *thin Pituite* that should have been carried off by insensible Perspiration, or other Ways of Excretion, falls upon the *Pulmonary* Vessels, 'tis thrown ont with such Violence and Force, that it often breaks the little Veins, or weakens and relaxeth the Chanels of the Glands; and if this Humour cannot be cast out this way, it becomes thick and corrupted, and then thrown out like *Pus*, the *Glands* being ulcerated, and the *Consumption* confirmed. And if in *Coughing*, little things like Hail or Grains are brought up, and these stink extremly when squeez'd with ones Fingers, a Latent *Vomica* or *Imposthume* in the Breast is always suspected. Some, indeed, in this Condition have lived several Years, and at last have been suddenly cut off by the Rupture of the *Vomica*. For, after suppuration, the Purulent Matter breaks out into the *Wind-pipe*, and choaks the Patient. But the further the *Vomica* is distant from the Center of the *Lungs*, the less danger there is of *Suffocation*.

There is no more certain *Sign* of Recovery in *Lethargick* Distempers, than a Copious *Salivation*, this indisposition being owing to cold, watery and gross Humours congested in the *Brain*. For, when the *Salivation* appears, it tells us that the *mucuous* Matter is rendred fluxible with the Blood, and brought by the Arteries which are distributed among the *Salivary* Glands, and those of the Nose, to be thence separated and thrown out.

Yellow

Yellow Spittle (which is likest to that which is *white*) having little or no mixture of Blood, is a Sign that not only the *Pulmonary Vessels* are not much vitiated, or the Blood Vessels corroded, but also that there is either an approaching Conversion of the matter into *Pus* without any afflux of Blood, or that the Phlegmatick Humour comes to be cast up. Therefore, if such *Spittle* happen at the Beginning of the Distemper accompanied with the forementioned Circumstances, there is hope of Recovery. But if latter, we may be assured, that there is much Morbifick and unconcocted Matter congested in the *Pulmonary Vessels*, and that those finer Membranes are cut and corroded, than which there is no *Sign* more *dangerous*.

Green, *Livid*, and *rusty Colour'd Spittle* with a noisom smell, signifies an extream Heat and Inflamation of the *Viscera*, threatning Danger to the Patient. But no such thing is *portended* by *foaming* Spittle, when it is caused by Anger or violent Exercise, nor by that which is commonly seen in the Mouths of those in *Convulsive Fits*: But when it happens in *Quinsies*, and to those in an *Apoplexy*, there is no hope of recovery. For *Foam* consisting of Air, and a mixture of Liquid viscous Matter, separated into the Mouth by the Orifices of the Salivary Chanels, or smaller Glandules of the Lungs and Wind-pipe, tells us, that there is not only an unusual Quantity of this Viscous Liquid in all the Vessels of the Body, but also, that

the *Oesophagus* is almost entirely shut (having only a small Cleft in the *Larynx*) and that the Tone of the *Fibres* is dissolv'd and irreparably *relaxed.*

Lastly, *Salivation* in a State of Health, may be consider'd, as it is *natural* or *forc'd*, and procur'd by *Medicines* or other means. That which is *natural*, is more or less dangerous according to ones natural State and Constitution. Some being of a Plethorick and blouted habit of Body, puft and blown up with Phlegmatick and watery Humours, are much benefited by *Spitting*, and such like Evacuations. For, of all the Humours in Humane Body, the *Lymph* by reason of its slow Motion and unactive Parts, is most apt to be *Coagulated* and *Congealed*, and then with much Difficulty dissolv'd. And tho' those in this State seem to be in Health, yet they are nothing less, being sluggish and unactive, and unfit for Animal Motions and Exercise. The *Colour* of their *Face* is Natural and fresh, they Spit little and have no Appetite, they Sleep much and sometimes are Feverish; and when all remedies prove ineffectual, they are at last suffocated and drowned in their own Humours, and by Degrees step into the other World.

But 'tis quite otherways with those who are of a Lean and Thin Habit of Body, their *Lymphatick Vessels* being already shrunk, withered and dry, either by sensible or insensible Evacuations or Perspiration; are rendred much more so, by profuse *Spitting*, whether *natural*, or *forc'd* and procur'd by excessive

Smoaking

Smoaking or otherways, whereby the Stomach is deprived of this *Menſtruum* and natural *Balſam* that ſerves to carry off its Impurities, moiſten and delute its Coats, and keep its Fibres in a due *Tone* and *Contraction*. And therefore it cannot be ſtrange, that, thoſe who for a *ſmoaky Pleaſure*, are ſo profuſe of this *Liquor*, (for it is not always an unprofitable Excrement) have little or no *Appetite*, are *weak* and *languiſhing*, and for moſt part *Coſtive* and *Pale Coloured*. But all this is to be underſtood with reſpect to thoſe in Health, and whoſe Habit of Body is *Thin* and *Lean*. For, the *Spittle* of thoſe that are *Scorbutick*, or affected with *Venereal* Indiſpoſitions, is *morbifick*, and therefore to be thrown out, that the Venom of that Diſtemper may be taken off. But here we are to obſerve, that, *Salivation* procur'd by *Mercurial Medicines*, eſpecially in thoſe that are Lean, and continues long, is, often followed with a *Hectick* and *Conſumptive* Diſpoſition.

As to *Spitting* of *Blood*, than which there is no *Appearance* more frightful, it may deſerve to be conſider'd, that, tho' this Liquor be confin'd and bounded by the ſtrongeſt *Tubes* in Humane Body, as was neceſſary eſpecially in thoſe Parts neareſt the *Heart*, not only for promoting its Circulation, but alſo for reſiſting its impulſive and violent Motion : Yet, who knows not how often and how many and different ways theſe Chanels are broken, corroded and divided, or otherways vitiated and rendred defective, ſometimes by a *Plethora* of Blood, a Suppreſſion

of uſual Evacuations, violent Motions of the Body, Intenſe Heat, and Paſſion of Anger, loud hollowing, violent Coughing, Worms, and ſharp Humours. And alſo when the Blood is too thin and rarified, for then it is eaſily filtrated, and penetrates the Pores of its *Tubes*; eſpecially, when their Fibres are flaggy and relax'd. So that by whatever means, or *whereſoever* the Blood Veſſels are open'd, thence it will flow as ſometimes from the *Hemorrhoid Veins*, and which concerns our preſent purpoſe, ſometimes from the *Lungs*, *Breaſt* and *Throat*, from the *Stomach* and *Inteſtins*, and from the *Noſe* and *Gums* into the Cavity of the Mouth, whence 'tis caſt out, and therefore called *Spitting* of *Blood*.

But, it being not eaſily known, when the Blood comes into the Mouth, and is caſt out thence, whether it proceeds only from the *Gums* and *Noſe*, and other Parts of the *Head*, or from the *Lungs*, *Stomach*, and *Breaſt*: 'Tis therefore requiſite we further inquire, whether there be any Concomitant *Appearanes*, and diſtinguiſhing *Signs*, that may bring us to a juſt *view* of this Affair. For, theſe being found, 'twill be no hard matter to know what's *portended* by this *Symptom* of *Spitting Blood*.

In the firſt place then, 'tis obſerved, whether or not, *Spitting* of *Blood* be accompanied with a *Cough*, and what's the manner of it. For, when the Blood comes from the *Stomach* by the *Oeſophagus*, 'tis ſaid to be always

ways *vomited* up, providing there be a conſiderable Quantity of it, and that which comes from the *Throat* only, to be *hauked* up eaſily, and when from the *Lungs* with greater *Violence*. But, nevertheleſs, the *Blood* that comes from the *Oeſophagus* and *Throat*, is ſometimes ſo viſcid, that it cannot be *hauk'd* up without great *Violence* and *Coughing*; whereas, that which comes from the *Lungs* by the *Wind-pipe*, is ſometimes brought up more *eaſily*, and with little or no *Coughing*; eſpecially, when the *Blood* is not very viſcid, and of a ſmall Quantity; ſo that it cannot be certainly affirmed, that in *Spitting* of *Blood*, a gentle *Cough* is an Argument of its coming from the *Throat* or *Wind-pipe*, and when more *violent*, from the *Lungs*. But whatever be the manner of the *Cough*, if there be no *Sign* of Diſorder in the *Breaſt* and *Lungs*, or Antecedent Cauſe by which they may be affected, or ſuſpected to be ſo, and the Patient is only ſenſible of a ſlight *tickling* in his *Throat*, but his Face is ruddy and flame-coloured, and complains of *Pains* in his *Head*, and the *Blood* is caſt forth without any *Froath*, but afterward is *froathy*; 'tis certain, that the *Blood* comes only from the *Head*, and thence derived into the *Throat*.

On the other hand, when the *Blood* is *Froathy*, and brought up with *Coughing*, we are not to doubt that it comes from the *Lungs*, (*a*) eſpecially, if it is not viſcid and glutenous, and comes from their lower Parts. For, in coming from thence into the *Mouth*, its

(*a*) Aph. 13. § 5.

its Parts are rarified and mixed with *Air*, and thus becomes, *froathy*, tho' it be no less such when it is also *viscid*. Now, that *froathiness* in the *Blood*, tells us that it comes from the *Lungs*, and not from the *Breast*, is yet more plain, in being brought up without any *Sense* of *Pain*. For, 'tis more likely that a Rupture or *Erosion* of the *Blood Vessels* in the *Breast* should be more painful than when it happens in the *Lungs*, whose tender Vessels are opened and broke, without the least Sense of *Pain*, as well as in *Hæmorrhages* at Nose and Gums. But, that *Blood* coming from the *Lungs*, should be of a *blackish Colour*, as some will have it, I think is hardly probable; chiefly, because in passing through the *Lungs* and *Wind-pipe*, it is mix'd with some Particles of *Air*, by which it is, as was just now observed, not only rendred *froathy*, but also more or less bright in its *Colour*, according to its thinness and viscidity.

But to put this Matter beyond all doubt, we are always to consider what happen'd to the Patient before he was taken with *Spitting Blood*; especially if he be affected with sharp and pricking *Pains* in his *Breast*. For in this Case, the *Blood* that's brought up, proceeds from the *Breast* or some *Tumor* in it, otherways it must come immediately from the *Lungs*, or is transferred into them from some other affected Part, either by Fermentation or Plethory, Fervency and Rarefaction of the Blood and Humours, by which

which the tender Vessels of the *Lungs* are broken and corroded, and thereupon a *Spitting* of *Blood* must insue.

Now it seems to be plain what's portended and presaged by it, if by the fore mentioned *Signs*, we rightly distinguish between that which is *Accidental* and *Habitual*. By the *first*, I understand that which meerly proceeds from some Accident, as from Hollowing or speaking too loud, violent Exercise, suppression of Hæmorrhages and usual Evacuations, intense Heat, and Passion of Anger, a *Plethora* of Blood, and violent Coughing, and such like; which are taken off by the administration of proper Medicines, and seldom or never return again. But it is far otherwise, when the *Spitting* of *Blood* comes to be *Habitual*, and of a long continuance, or returns at certain *Intervals*; For this denotes a Fervency and Acrimony in the Blood, by which the tender Vessels of the *Lungs*, being not able to resist its quick and impulsive Motion, are wont one time or other to be opened or corroded, and then there must be a great Expence of that *Liquor*, which for most part does not stop, till the Feverish *Orgasm*, and intestin Motion of the Blood, is taken off by Art, or ceases of its own accord.

This is that fatal *Spitting* of *Blood*, which is wont very often, to terminate in an incurable and mortal *Consumption*. For, 'tis followed with *Spittle* of Purulent *Matter*, and when *this* is suppressed, the Patient

(a) Aph. 15, & 16. § 7.

Dies. (a) Because the extravasated and stagnated *Blood* in the *Lungs*, is not only converted into purulent Matter, by which their *Texture* is dissolved, and their Parts corrupted, but also the purulent Matter comes at last to be mixed with the *Blood*, and thus infects the whole Body. And, when the *Spittle* is suppresst and *stopt*, or detained in the *Lungs*, the Patient must die in a little time. Because the Blood Vessels must thereupon be obstructed, after which there is no *Circulation* or *Life*.

CHAP.

CHAP. X.

Of Prognosticks *taken from* Sweat, Insensible Perspiration, Hæmorrhages, *and* Blood *taken from the* Veins.

SWEAT is a thin sort of *Urine*, and differs from it, only in the Proportion of the *Contents*, and fineness of its Parts, disingag'd from the Mass of Blood, and thrown out upon the Cutaneous Glands and Pores of the Skin, by the impulsive Motion of the Circulating Blood. When it comes not under the Cognisances of the Senses, and ariseth only in imperceptible *Effluvia*, it is called *insensible Perspiration* or Evaporation. Of the first, namely, that which is called *Sweat*, some is gross and viscous, and sometimes it consists of more fine Parts. It is of different Colours, a thing not commonly adverted to or observ'd, some Sweat being Yellow, and of a greenish Colour, *&c.* We are not to wonder there should be such variety of Colours in Sweat, nor that it should be Salt, which as was observ'd, is inseparable to *Urine*, especially, when loaded with much *Sediment*: And 'tis well known, that *Sweat* hath its *Savour* and *Smell.*

It is likewise *Hot*, *Cold* and *Lukewarm*, and happens in all the *Periods* of Diseases. Sometimes it continues a long time, and some-

sometimes 'tis soon Interrupted. Some *Sweat* is well *coctled* and *refin'd*, and another sort is Viscous and Crude. Some is *Critical*, and some *Sweats* are *Symptomatical* and *Periodical*, or *Partial*, as in intermitting *Fevers*.

In a State of Health, this *Serum* or *Ichor*, is most copious in those of high feeding, and of a Plethorick Constitution and brisk Circulation, their *Pores* being commonly more open and pervous, than in others that are not so; but when these are shut up and contracted, the Humors that were wont to be cast out by *Sweat*, must be lodged in the Blood and Capillary Vessels, causing frequent Disorders and Distempers, unless they be thrown off by some other *Emunctory*.

Were we to inquire how, and after what manner this *Serum* is driven into the Cutaneous Glands, and thence into the *Pores* of the *Skin*, the most probable reason that could be aduc'd, must be a straitning or pressure upon those Glands, by the *appulse* of fermented Blood; or, a rarefaction both of the Blood and Humours, by which the *Saline* and *aqueous* Parts of the last, are dissolv'd and separated one from another, and rendred *fluxible*, to be strain'd into the Sudoriferous Glands, and thence deriv'd into the *Pores* of the *Skin*, and form'd into *Sweat*. And here we are to observe, that, a fervency, or violent and impetuous Motion in the Blood, tho' it causes a Preternatural *Heat* in the Skin, is not always attended with the Effect of *Sweat*, unless the Humours be duly attenuated, rarified and refined by frequent-

ly

ly circulating with the Blood. For, by the Rules of *Mechanism*, a due Secretion requires not only clear Pores, and a proportioned resistance of the Solids, but likewise a proportional Motion and Quantity of the Parts of the *Liquid* to be strain'd out, for if either of those be wanting, the Matter to be separated and thrown out, will either be obstructed, or carried off a preternatural way.

Now the *Character* of all kinds of *Sweat*, being best know by their *Issue* and *Effects*, 'tis not to be doubted, that the *Sweat* must be good and Salutary, whereby the Disease is mitigated, and comes after the Signs of Concoction, a *Rigor* or *Shivering*, is Copious and Warm, and equal all over the Body. Such a *Sweat* denotes Power and Strength in the Patient, and a free *Circulation* of the Blood.

Such *Sweats* as are *profuse* and last long, happening without any apparent Reason, signifie a full and Plethorick Body, (*a*) full of Crudities, and very often become *Colliquative*, that is, they carry off a great Quantity of the Nutritious Particles, as if they were melted and rendred more fluid than ordinary; and cast out by the Pores of the Skin. whence it comes to pass, that the Blood being continually impoverished, becomes *Sharp* and *Hot*, *Hectick* and *Feverish*, and the solid Parts of the Body, by this Means, being also depriv'd of their requisite Nourishment, do by Degrees waste and fall into an *Atrophy*. This profuse and *Colliquative Sweat*, as it accompanies

(*a*) Aph. 41. § 4.

accompanies every *Conſumption* of the *Lungs*, in the deplorable ſtate, and higheſt degrees of it, or when it is haſtening to a fatal Period, ſo is it obſerv'd in the lamentable ſtate of every Diſtemper, and the Diſſolution of Nature always follows it.

Reducible to this is *Baglivius* his Obſervation, " That if a copious and univerſal *Sweat*, " with an extream Weakneſs, comes upon " an obſtinate *Colick*, it denotes an approach- " ing *Palſy*; but when it comes upon a " *Looſeneſs*, it cures and ſtops it, the Hu- " mors being tranſlated to the Habit of the " Body. And if one doth not ſweat upon " the Adminiſtration of proper Medicines to " provoke it, it will break out upon letting " of Blood, eſpecially if the Stop was ow- " ing to an over-bearing Croud of Humors, " and ſtiffling as 'twere in the Veſſels: For " when the vital Fire has more room allow'd " it, it is thereby rather blown up than ex- " tinguiſh'd, and then the *Serum* is thrown " out to the Cutaneous Glands.

The Reverſe of *profuſe*, *long-continu'd*, and *colliquative Sweats*, are thoſe that are *ſhort* and *interrupted*, but in ſome Diſtempers equally *pernicious*. When the Humor to be ſeparated by *Sweat* hath gone ſeveral rounds with the circulating Blood, and thereupon is only partly concocted, rarified and render'd fluxible, the *Sweat* ſometimes appears, and then is *interrupted*; ſometimes 'tis very inconſiderable, and then more copious all the Body over, or in this or that part, as it is diſſolv'd, ſeparated and ſtrain'd into the

Glands

Glands and *Pores* of the Skin. But after all, this is but *partial*: and tho' there is nothing more usual in *Intermitting Fevers*, and that *cum Euphoria*; yet, in those that are more acute, it speaks an extream *Lentor* and Viscidity in the Humors, and Contraction or Obstruction in the Cutaneous Glands, a languishing Motion of the Blood, and a vain Attempt of Nature, especially if such Sweats happen at a *critical* time.

That *Sweat* should be *cold* (than which nothing is more *Omenous* in *Fevers* *) when at the same time, the Heat of the Skin is intense, is fairly accountable, if we consider, that if the Humors be of that nature, that notwithstanding the continual Flux of the Blood, only some of their Parts are attenuated, and some thin Liquor is strain'd through the *Sudorifick Glands* after the usual manner, or perspir'd through the Cutaneous Pores, resembling *Sweat*, which indeed tells us, that the Glands, these little *Tubes*, and Receptacle of the Humors, are sufficiently open'd. But we are to observe, that if the Humors to be separated this way, be not also concocted and subtiliz'd, they must lodge in the *Glands*, and the small Portion of that which resembles *Sweat*, must be cold, by reason of the great distance from the *Heart*, and almost without the Limits of *Circulation*. When the *Fever* is not of the acutest sort, this *cold Sweat*, if it is likewise *frequent* and *interrupted*, signifies a lengthening of the Distemper; and that, after some time, the Humors, tho' yet gross and viscid, flow and

* Aph. 37. §. 9.

influxible,

influxible, may at last be attenuated to that Perfection, that may take it quite off: But such *Sweats* are always *unnatural.*

Again, when the Body is loaded with cold and thick Humors, which by the Arteries are carry'd into all the Parts, but by reason of their *Lentor* are not so readily derived into, or *fluxible* in the Veins, where the impulsive Motion is weakest, especially in the extream Parts, in which, when this cold and gross Humor is congested and naturally dissolved into *Sweat*, it must necessarily be *cold*, because the Humors are such. And if this *cold Sweat* be owing to no other Cause (for thus it happens in *Lethargick* Distempers) the *Symptom* is not so *dangerous* as in the cases but just now mentioned. But when it is owing to a Flagginess and Laxity of the Fibres, the case is *deplorable.* Thus also in *Fainting Fits*, a *cold Sweat* breaks out all over the Body, but especially about the Neck, Temples and Breast, and proceeds from an interrupted Circulation of the Blood; upon which the Parts become cold, and an aqueous Humor or Moisture, by reason of the Weakness, Flagginess and Laxity of the Parts rather than by straining or compression, appears upon the Skin; or, the perspirable Matter being now to break out, but wanting a due Heat to rarify its Parts, and carry it off after the usual manner, is form'd into a Liquor resembling *Sweat.*

'Tis pretended to foretel an *approaching Sweat* by *inspection* of the *Urine*, from *Hipp. Observ.* (a) namely, when *thin Urine* is follow'd

(a) Coac. Prænot.

low'd by that which is more *groſs* and *thick*, becauſe the laſt being leſs watery, and containing a leſſer quantity of the liquid part than the firſt, this aqueous part muſt be tranſlated elſewhere, namely, into the Cutaneous Glands, as the ſolid part into the *Urine*. And becauſe the liquid part of *Urine* and *Sweat*, as well as their *Salts*, partake of the ſame Nature, 'tis not unreaſonably ſuppos'd, that *thick* and *groſs Urine* coming after that which was *thin*, may *preſage* an approaching *Sweat*. For there is nothing more obvious, than that the more of *Liquids* and *Salt* that's carry'd off by *Sweat*, the leſs goes by *Urine*, and conſequently is more thick and coherent.

There is no one but knows how dangerous it is, when one in a continual, or ſuch like *Fevers*, is a *ſweating*, and at the ſame time is taken with *Horror* and *Shivering*: For ſuch *Sweats* tell us, that they are not only *partial* and *imperfect*, but alſo that the noxious Humors cannot be diſcuſſed *critically*. The like is to be ſaid of thoſe *Sweats*, which happen in the beginning of Diſeaſes, eſpecially in *malignant Fevers*, tho' accompany'd with other good *Signs*. For in theſe *Fevers* the Patient ſometimes *ſweats* the firſt day, and the *Fever* ſeems to remit; but then, other worſe *Symptoms* appear, and after many ſuch *Sweats*, the Patient dies; for ſuch frequent *Sweats*, by which the Diſtemper is not mitigated, may always be ſuſpected to proceed from a waſting and conſumption of the Body.

But

But the less *Malignity* (to use that Term) there is in those *Fevers*, so much the more beneficial are the *Sweats*, as well as in all other *Fevers*, providing that after them the *Symptoms* are not worse: For by this manner of *sweating*, the Febrile Matter is rarefy'd and attenuated by degrees, and also carry'd off by *insensible Perspiration*, which upon this account, and in this case, as well as all others, ought never to be interrupted or diverted, according to the Excellent *Sanctorius* his Caution (*a*). For, as *Fevers* and most other Distempers are owing to an obstructed *Perspiration*, so is it one of the Ways, and the neareſt too, that Nature hath contriv'd for the cure of them.

(*a*) Sanct. Aph. 47. §. 1.

When the Orifices of the Cutaneous Glands, by long continued and *profuse Sweats*, are too much open'd, or by a vehement ejection of gross and crude Matter; there follows a Sense of *Wearinesss*; especially, if those Parts have been distended a long time, (for a long Distention of the Fibres deprives them of their *Elasticity*,) they recover their *Tone* and Continuity with great difficulty. This is also one of the Inconveniencies and Effects of *forc'd Sweats*. But there is yet another of more fatal and dangerous consequence, namely, when *Sweats* are untimely *provok'd* and *forc'd*, in *continual Fevers*, *Small Pox*, and other like Distempers; whereby a greater Inflamation is rais'd in the Blood, especially in those that are young, and of a hot Constitution: For they sweat with difficulty, and the more they endeavour to force Sweat by strong

ſtrong Diaphoreticks, and other ways, ſo much the more are they in danger of falling into *Frenzies* or *Deliriums*: For, by the Acceſſion of new Heat, the *Texture* of the Blood is diſſolv'd, or ſtagnats in the Capillary Veſſels of the Brain.

So that *Evacuations* by *Sweat* are to be attempted with the greateſt caution, not indiſcriminately by all Perſons, nor at all times: For if Medicines to procure it be given when the Blood is of a *Texture* not open enough (which it cannot be near the beginning of moſt Feveriſh Diſtempers) or when too heterogeneous Subſtances abound in it, *forc'd Sweats* oftner diſpoſe the Blood to ſtagnate in the tender Veſſels of the Brain and Nerves, than to ſeparate its noxious Particles at the deſign'd ſecretory Parts; and a more violent Motion being thereby raiſed in it, the Confuſion of its Parts muſt be increaſed, and other Diſtempers more dangerous and more hardly to be remov'd, introduc'd.

I know that this ill Cuſtom of *forcing* Sweats untimely, whether by inward Medicines or outward Application, ſo common now-a-days (as I am ſatisfied that to this Method are owing many obſtinate Diſtempers, which, by calming, inſtead of exagitating and inflaming the Blood already diſturb'd, would have gone off) are preſcrib'd with an intent to render the Fluids of our Bodies the more fluxible and brisk in their Motion, whilſt in the mean time the fibrous and ſolid Parts may be either naturally, or by reaſon of the Diſtemper, too much con-

tracted. But 'tis plain and obvious, that upon the administration of hot and spirituous Medicines, in the beginning of the Distemper, and while the Humors are crude and unconcocted, and unfit to be separated, those Parts are not only the more contracted, but their Fluid rendred impetuous, and remarkably more violent in its Motion: So that, by the *Nisus* of the one and Resistance of the other, the *Viscera* must be distended and distracted, and variously affected with *Pains*, *Deliria*, *Watching* and *Convulsions*.

Spontaneous Sweats therefore must be the *safest*, and more effectual for the cure of *Feverish* Distempers, than those that are preposterously *forc'd* and *provok'd*; which, as we have seen, inflames the Blood, exasperates the Distemper, and expelleth the crude Humors any way; so that they not only fall upon the *Brain*, but also sometimes upon the *Pleura* or Membrane that covers the Ribs, and thus becomes the cause of *Pleurisies*, and sometimes they fall upon the *Lungs*, which occasions a *Peripneumonia*: Besides that too great a quantity of *Serum* thus evacuated, must drain the Blood; and when its Moisture, wherewith it ought to have been diluted, is quite wasted, 'tis no wonder if the just now mentioned Inconveniencies and fatal Symptoms follow soon after. For we see how unsafe and preposterous it is to attempt the removing even of *Tertian* and *Quotidian* Agues by violent Diaphoretick Medicines, and the administration of the *Quinquina*, when they are new, *i. e.* almost of the nature

ture of *continual Fevers*. 'Tis true, as soon as the *Sweat* breaks out, Restlesness and other Symptoms vanish immediately: Yet it very often happens, that if the *Sweat* be *forc'd* more than it should, the *Fever* which *intermitted*, terminates in a *continual* one, to the greater hazard of the Patient.

INSENSIBLE PERSPIRATION having been mentioned, as one of the Animal Excretions, might properly have fallen in to be considered here, if the Doctrine of it was not to be had in *Sanctorius* his excellent Book *de Statica Medicina*. But it may be adverted to, that if his excellent Observations were more generally known, and the solid Rules and Precepts of Health that may be drawn from them, better observ'd, we might hope to have the *Catalogue* of Diseases either lessen'd and sunk in their number, or better known, and many of them cured with less expence of time, more ease and safety than now they are. Many are sensible of the direful Effects of an *obstructed Perspiration*, that don't know or consider, that a free and regular one, is equally necessary with the other more sensible Evacuations, to the preservation of the *Animal Life*.

And tho' the subtile insensible *Effluvia*, that are diffus'd and fly from our Bodies, be only the Produce or Excrement of the third and last Concoction, or Rarefaction of that Liquor in the Cutaneous Glands, which are as 'twere so many *Viscera* and Ventricles for concocting and making it *perspirable*. Yet,

when these are obstructed (which often happens) 'tis hardly credible how many ways the Animal Functions are thereby interrupted and rendred deficient: For when that which should have been perspir'd, is shut up and inclosed, the Excretory Ducts must be distended, the Capillary Vessels straitned, the Blood augmented and inflamed, and its Channels embowlden'd; and if it be not taken off by *spontaneous Sweats* and *Urine*, &c. Diseases are inevitable: For the *perspirable Matter*, if lodg'd a long time in the Vessels, must either inflame the Blood, or clog it in its Circulation, or coagulate, putrify and corrupt it, and at last be the productive Cause of *Fevers*, *Apostems*, *Catarrhs*, *Erysipelatose* and *malignant Fevers*. All which are not only prevented, but often cured by a due and regular *Perspiration*, which takes off a greater quantity of Morbifick Matter *in dato tempore* (*a*), with respect to its *Ponderosity*, than any other Evacuation whatsoever. So that Diseases *intra Animal* owing their Rise to the want of it, by augmenting the quantity of the Blood in its Vessels, are taken off in less time by *insensible Perspiration*, than by the more *sensible* Excretions.

(*a*) Sanct. Aph. 59. § 7.

'Twere endless to rehearse the many and different Causes of an *obstructed Perspiration*, only we may take notice of a few among others here and there accounted for by that Ingenious Author, and they are these, namely, *Pains*, *hard Labour*, *Passions of the Mind*, *Cold*, *Restlessness*, *purgative Medicines*, *Looseness*, *Vomiting*, *too many Clothes*, *profuse*

profuſe and unſeaſonable Blooding, ſtrong feeding, eſpecially in the Morning, immoderate Watchings, damp and moiſt Air, ſwimming in cold Water, groſs and viſcous Food, want of exerciſing the Body and Mind, and Abſtinence from Venery in thoſe of a briſk and ſtrong Conſtitution.

Thus we have ſeen how many and different ways a Human Body is freed and diſengag'd from its Impurity, Excretions, and thoſe Humors that are *heterogenous* to, and inconſiſtent with its *Oeconomy*, eſpecially in the Attacks of *Acute* Diſtempers, whoſe Courſe is ſwift, nice, and dangerous, if compar'd with thoſe that are more *Chronical*, the Impreſſions of which not being ſo ſharp, or commonly attended with ſuch fatal *Events*, tho' of a longer ſtanding and continuance.

There is yet *another*, different in its nature from all the former, in being a Diſorder of the *Great Spring* of the *Machine*, or a Raging and Ebullition of the *Blood* or Vital Stream, by which it leaves its proper Channels, and breaks out on a ſudden, and *impetuouſly*, at the Noſe, Hæmorrhoids, and other places. This active Liquor of the Veins and Arteries, hath been often cool'd and check'd in its impetuous Motion by this *ſpontaneous Eruption*, to the recovery of the Patient. Hence it is, that in imitation of Nature, *Phyſicians* in all Ages have been taught to open the Veins, not daring to truſt to or confide in its own management, in thoſe Diſtempers that are commonly called *Acute*, as raging *Fevers*, and *Inflamations* of the

Viscera, &c. chiefly, because all *spontaneous* and natural *Hæmorrhages*, have not been attended with a happy and fortunate *Event*, many of them having been only Forerunners to certain Death.

Thus, a few Drops of blackish colour'd Blood issuing from the Nostrils in continual Fevers, accompany'd with a cold Sweat, livid and black Excrements or Stools, is a *pernicious Sign*, as was above observ'd; neither doth it deserve a *better Prognostick*, when this manner of bleeding at Nose happens in other Distempers, if it is inconsistent with the Nature of the Disease, the Constitution of the Patient and of the Air, the Season of the Year, and manner of living, and Diseases that have their rise from Phlegm, and the like. For such Distillations of *Blood*, especially if it be *blackish* and *dark-coloured*, either denotes a *Plethory* of it in the *Brain*, or a *Lentor* and *Coagulation* in its Capillary Vessels or adjacent Channels. By some it hath been suppos'd to be a latent Sign of *Worms*, when it happens in continual Fevers; but nothing of this can be affirmed for certain. Only it may be noted, that *Bleeding* at *Nose* seldom or never succeeds well in Spotted Fevers, especially when attended with many grievous *Symptoms*.

It likewise deserves to be observ'd, that if a few Drops of *Blood* come from the Nose on the fourth Day of the *Fever*, and the Patient hath been *sneezing* some time before, and the Sediment of his *Urine* is white; this Hæmorrhage is far from being a dangerous Sign;

Sign; Because, sometimes the *Capillary Arteries*, which are distributed to the internal Part of the Nose, may be broke by the Violence and Concussion of *Sneezing*, and therefore this *Blooding* at *Nose*, cannot be reckoned among the *Symptoms* of the *Fever*.

We have therefore reason to believe, that, there is least Danger in *Eruptions* of *Blood* at Nose in Fevers, when it is *Plentiful* and *Copious*. For, when the Parts of the Blood are rarified, its *Nisus* upon its Chanels is the greater, which, when the *Capillary Arteries* cannot resist, they must be broke at last, and thus give way to the more powerful Motion of the Blood; and thus sometimes contribute to the Recovery of the Patient, in cooling and calming the remaining Part of the Blood in the Veins, and promoting *insensible Perspiration*, providing the *Hæmorrhage* be not *Profuse* and *Immoderate*. For, in this Case, the *Event* must be *fatal*. So that *Blooding* at the *Nose* is never accounted a *good Sign*, unless it give ease to the Sick, take off *Thirst* and other Symptoms of the *Fever*, or at least mitigate them, and render the *Pulse* stronger, more brisk and equal.

To inquire into the *State* of the *Blood* in the Disorders of Sickness, and what's *portended* by it, may seem to belong to another *Province*; namely, the *Diagnostick* and practical part of *Physick*, nothing being more necessary to accomplish the Cure of most Distempers; especially those that are *Feverish*, than to consider the Blood in all its Circumstances and Accidents, as its Co-

lour and Consistance, and whether it is too thin, rapid and inflamable, or too thick, viscous, roapy, apt to congeal and stagnate, and if it be of too bright a Red, and loaded with plenty of volatile and inflamable Parts, or of a Terrestrious and blakish Colour, *&c.*

But it may not be much besides the present purpose, to take notice of some Observations, that have commonly been made concerning the *Blood* taken from the *Veins*, and what is *presaged* by it. First then, it hath been observed, that,

In Inflammations of the internal Parts, especially in *Pleurisies*, the *Blood* taken from the *Veins*, has a *white Crust* or Gelly upon its *Surface*, which seems to be the Nutritive Chylous Part of the Blood, disingag'd from its Mass, and gathered into this *Crust*, by the excessive heat of the Blood, overstocked with volatile Particles. That the Blood of *Hectick* Persons, is of a *bright red Colour*, and doth not easily *congeal*, and at the same time, they are lean, watchful, peevish, *&c.* from whence 'tis inferr'd, that there is a Redundancy of Humours in their Fluids. That the *Blood* of those in *Malignant* and *Pestilential Fevers*, if it appear Pure and Natural, is a most dangerous *Sign*, and speaks more of *Malignancy* to be lodg'd in the Veins neareſt to the Heart, than can be brought forth by Blood letting. And that the Blood drawn from the Veins before the Eruption of the *Small-Pox*, having the fore mentioned *Crust* on its *Surface*, denotes, that the *Small-Pox*

Pox will be very Numerous and Dangerous.

But, beſides theſe more common Remarks upon the *Blood*, 'tis uſual with ſome in opening a Vein, to obſerve its various *force*, the Degrees of *Heat*, the *Colour* and Changes that happen to it, the proportion of the *Grumous* part of the *Blood*, compared with its *Serum* and *Colour* of both, and eſpecially, to contemplate its *Scum* and *Froath*, and to form their *Auguries* and *Predictions* accordingly; which nevertheleſs, are founded upon uncertain *Theories*, long ſince exploded. For,

Beſides, that the very Contemplation of thoſe *Appearances* impoſe upon our *Senſes*, and therefore the Concluſions taken from them muſt be doubtful and uncertain. The *impetus* of the *Blood* in iſſuing from the Vein, may be owing to the vigour or fainting *State* of the *Mind*, as well as the largneſs or ſtraitneſs of the Wound made by the Lancet, and the time that intervenes between the inciſion of the Vein and binding up the Arm. For, the longer the time is, the *Blood* iſſues forth with the greater *Violence*, and the firſt *Impetus*, that is, before the Vein be a little emptied, is *brisk* and *Rapid*. But in a little time it becomes more *Weak* and *Languiſhing*, unleſs the contrary happen, that is, the Patient through fear or fainting, hardly bloods one drop in the Beginning, but after Recovery, the Blood iſſues forth in a large and plentiful Stream.

Again,

Again, an enquiry into the *Heat* of the *Blood* by the *Touch*, is no less precarious and uncertain, being, that it may have this or that *Degree* of *Heat*, according to the *Constitution* of the Patient, the Passions of his *Mind*, and Spirituous Liquors taken before or after the Operation.

Neither can it be known whilst the Blood comes from the Veins, whether it be *Good* or *Bad*, or whether that which comes first be *Pure* and *Sincere*, and that which comes afterward *Impure* and *Corrupted*, and *è Contra*. For, such a disparity in the Blood while it gusheth out with Rapidity can hardly be observed by the nicest Eye, unless its *Colour* be manifestly different from that which is natural; that is, that it resembles *Cream* or *Chyle*. And the *Appearance* of one sort of Blood coming in the beginning, and another sort in the Progress, is meerly accidental, and the Observations made upon both; namely, that the first sort of Blood being followed by that which is *impure* and *corrupted*, signifies *malignant Humors* in the *Viscera*, or any inflam'd Part, and that *pure* and *good Blood* coming after that which is *bad*, a total Exterpation of the vitious Humor, is false and uncertain. For, this Change is owing to contingent and uncertain *Appearances*, and the Observations made concerning it, repugnant and contrary to the Laws of *Circulation*, the internal Inflamations of the *Pleura* and *Lungs* excepted, in which Cases the desparity of the flowing Blood is very remarkable. But after all, the Inflamation is

not

not always immediately, or ſome time after taken off by drawing forth ſuch Blood; neither are the Symptoms mitigated, which neceſſarily ſhould be, if the Blood cauſing the Inflammation were Evacuated. And 'tis uncertain whether all the grumous and impacted Blood be drawn off from the Interſtices of the Fibres of the inflam'd Part; or, whether *good Blood*, coming after that which is *bad*, more of *this* be not yet remaining.

And no leſs uncertain are the Obſervations that are made upon the *Livid*, *Whitiſh* and *Yellow Cruſt* upon the *Surface* of the Blood, it being rather a crude indigeſted *Chyle*, intimately mixed with the Blood (for, it inflames being put to the Fire) than a Pituitous or Phlegmatick Excrement. And 'tis not to be doubted that this *Gelly* is the morbifick Matter of a great many Diſtempers; eſpecially, *Pleuriſies* and *Rheumatiſms* which are always accompanied with a Heat in the Blood, and a viſcous thickneſs in its *Serum*. So that 'tis ſtrange, any ſhould think that this *Cruſt*, is only to be obſerv'd in the Blood of thoſe of a cold Conſtitution, it being ſo commonly and frequently obſerved in the *Acuteſt Fevers*, and therefore is ſo far from ſignifying a *Phlegmatick Crudity*, that 'tis rather the Produce of an *Exceſſive Heat*.

Laſtly, We are not to look upon the *bright rediſh Colour* of *congeal'd Blood*, to be always a *Sign* of Recovery, or of ſound Health, or that which is *Party Coloured* and interſpers'd

spers'd with Spots of a *livid* and *blackish* Colour to be fatal and *Omenous*. For the Blood of those in a Mortal Fever and dying State, hath often been observed to be *bright* and *redish* in its *Colour*, and those to have escaped and recovered, whose Blood hath been *Party Coloured*. And 'tis as plain as certain, that the *Blood* immediately taken from the *Vein*, is not *Flame-Coloured*, nor becomes such but by the influence of the *Air*; neither is it of this Colour all over, and in the *Middle*, but only on its *Surface*, which is hardly a Hairs-breadth. For in the *Middle* as every one knoweth it is *Blackish-Coloured*, and when cut and expos'd to the *Air*, in due time, 'tis colour'd like the *Surface*. Neither is the extraordinary *Texture* of the Blood and *Serum* resembling *Milk*, always to be accounted the most Dangerous and Mortal Sign: For, in the Progress of the Distemper, this sort of Blood is changed into a more natural Colour. So that 'tis plain what a due Caution and Circumspection is requisite, not only with respect to Blood-letting, but also to the Administration of Medicines upon its *Appearances*, and forming *Auguries* concerning it.

CHAP.

CHAP. XI.

Of Prognosticks *taken from* Respiration *and manner of* Breathing.

NOthing is more conducive to form just *Predictions* or *Auguries* concerning Diseases, than to know the Weakness and Strength of the Patient. If *Nature* is strong and vigorous, one cannot die, says *Galen*, than which nothing is more true, with respect to some Distempers. But the Power and Strength of *Nature* is best known by its Actions, and the exerting of its usual Functions, a due Circulation of the Blood, Secretion of Humours, and Generation of the Liquid called *Animal Spirits*; all which, depending upon Motion, must be performed by the Organs that Nature (which is never wanting in what is necessary to its Designs,) hath appointed.

This in nothing is more Notorious than in *Respiration*, by which the *Air* comes into our Breasts by the Mouth and Nose, but makes no long stay there, being again ejected or pressed forth, and we supplied with more fresh *Air*. The *Dilatation* and *Compression* of the Breast is obvious, and that this Motion is successively continued, allowing some *Pause* between *Inspiration* and *Respiration*, and that 'tis in our Power

to

to alter this *Vicissitude* as to *slowness* or *frequency*; but, that of necessity we must breath. For, if Breathing be altogether interrupted; *Suffocation* and Death, must needs follow.

But, as *Respiration* thus in *General*, is absolutely necessary to the preservation of Life; 'tis no less such for promoting the Motions and Functions of Humane Body in *particular*, and one of its Primary Uses (of which the promoting of the *Circulation* of the *Blood*, by the constant Motion of the *Diaphragma*, Intercostals and Muscles of the Breast, is undoubtedly the Principal) seems to be that of refining and attenuating the Blood in the *Pulmonary Vessels*, before it passes into the *Pulmonary Vein*, and thence into the left Ventricle of the *Heart*. For,

The Blood in its circulating Motion, must undergo a Thousand Changes and Alterations, not only in separating part of its Substance for Nutrition and Muscular Motions, but chiefly in receiving *Heterogeneous* and *Excrementitious* Particles, by the Accession and Addition of New *Chyle* from the *Thoracick* and *Lymphatick Ducts*, which, meeting in the right Ventricle of the *Heart*, fills it with that whitish and *Chilous* Liquor, which, according to frequent Experiments we see in Dogs dissected some Hours after being fed: So that the *Blood* in the right Ventricle, passing into the *Pulmonary Artery*, is *mixed* and *impure* with respect to its Quality and Consistance, and must needs be divided, attenuated, and subtiliz'd, and its Grumous and Glutenous Parts rendred more fluxible

fluxible in paſſing through the Pulmonary Chanels to the left Ventricle, and thence into the great Arterie. That thus the new *Chyle*, or whatever is *Heterogeneous* to the Blood, ſhould be attenuated and refined in the *Pulmonary Veſſels*, and brought to a perfect *Craſis* and Diſpoſition, ſeems to be very plain from the *Structure* of the *Lungs*, and their Motion in *Reſpiration*. For, their *Lobes* being branch'd out into innumerable Capillary Chanels, through which the Blood muſt paſs, its Parts muſt neceſſarily be bruiſed, preſſed upon and divided; and thus rendred the more *fluxible*, through the Capillary Veſſels, all the Body over, and adapted to be deriv'd from the *Arteries* into the *Veins*, and from the Capillary ones of the laſt into their greater Chanels.

And as *Reſpiration* (not to mention its other Uſes, or attempt to account for its *Mechanical* and moving Cauſe) contributes to prepare and bring the Blood to its natural and determinated *Craſis* or Conſtitution for the Duties of Circulation; ſo on the other hand, when the Blood is purified, unmix'd and fluent in the Pulmonary Chanels, *Reſpiration* is promoted, made *Eaſy* and *Natural*, and thus becomes one of the neceſſary Conditions without which it cannot be either.

But beſides this due *Conſtitution* of the *Blood* that's requiſite to a natural and *eaſy Reſpiration*, there are others no leſs neceſſary; namely, a liberal *Flux* of Animal Spirits into the Intercoſtal and *Muſcles* of the *Breaſt*, (notwithſtanding they want *Antagoniſts*)

For,

For, in *Inspiration*, the *Air*, by reason of its *Elasticity*, insinuating it self into the Cavity of the *Breast*, dilates and fills it; whereby those Muscles being contracted more than usually, must, by reason of the *Elasticity* of their Fibres, recover their former State, and partly, at least, contribute to the Ejection of and pressing out the *inspired Air*, which, without an *influx* of Spirts could not be effectuated. 2*dly*, A due conformation of the *Breast* and its Cavity. 3*dly*, That of the *Lungs*; and, *Lastly*, A well constituted *Air*.

These being the Conditions that are absolutely necessary to an *easy* and natural *Respiration*, 'tis readily conceivable; that, if one or all of them be wanting, one cannot *breath* but with *difficulty*; But the *Modus* and Causes of an *uneasy Respiration*, being so various and almost innumerable, being, that every one of its *Organs* may a Thousand ways be vitiated; it will be proper to supersede the recital of them, and confine the following Observations to that which is owing to a Defect in the *Lungs*, that is, the *Aspera Arteria*, or *Wind-Pipe*, and the several parts of it, the Substance of the *Lungs* and Blood Vessels that are in it; and that with respect to *Fevers*, and such like acute Distempers.

An *uneasy* or different *Respiration* as every one knoweth, is of three sorts, which nevertheless differ one from t'other only in Degrees. Thus, A *Dyspnæa* is little different from a natural *Respiration*, only 'tis more

quick

quick and *low*, or *loud* than uſual, without a *Fever* ſnorting and hiſſing. An *Aſthma* is yet more uneaſy, the *Reſpiration quicker*, with ſnorting and hiſſing, but not accompanied with a *Fever*. Neither is an *Orthopnœa* accompanied with a *Fever*; but the difficulty of *Breathing*, is yet greater than in the former *ſorts*, being *lower*, *quicker*, or more *ſlow*, ſo that one cannot *breath* without having his Body ſet upright.

Now the Cauſes of an *uneaſy* and difficult *Reſpiration*, and the fore-mentioned differences of it, may probably be theſe; namely, that in the firſt ſort, there is a greater than uſual *afflux* of Spirits into the Muſcles of the Breaſt and Ribs (if it be allow'd that theſe are not meerly paſſive in *Reſpiration*) by which, the Motions of Breathing are rendred more *frequent* and *loud*: For we ſee one breaths after this manner of his own accord, with an intent to have ſome Eaſe thereby. Again, an *Aſthma*, in which the *Reſpiration* is more difficult than in the former, is occaſioned by whatever can obſtruct the *expanſion* of the *Lungs*, either by ſtraitning or preſſing upon them. The ſame is owing to a preſſure upon the *Wind-Pipe*, or whatever *liquid* or *ſolid* that may happen to ſtuff or fill up its Cavity, or render it narrower than is uſual. To this muſt be aſcribed the *hiſſing* and *ſnorting* that's obſervable in thoſe affected with this Diſtemper. For, the narrowneſs of the *Wind-Pipe* in obſtructing the Entrance or Admiſſion of the *Air* into the *Lungs*, muſt neceſſarily be the

cause of this *Appearance*. Hence it is, that in an *Orthopnæa* one must sit upright, that the *Air* may pass the more easily into the *Aspera Arteria* and *Lungs*, in which Posture only he can breath a little, *that* being press'd upon from without, or straiten'd within by *Tumors*, &c. Add to this, too thick, cold, moist and dry *Air*, by which also the *Expansion* of the *Lungs* is obstructed, and by the *Blood*, when it is too thick, viscid, hot, fervent, violent in its Motion, and when the *Vessels* of the *Lungs* are impacted with Dust, Stones, cold and viscid Humors, thicken'd *Lymph*, and stagnated Blood, *&c.*

And here we are to observe, that tho' all these Degrees of a difficult and *uneasy Respiration* may happen to be without any *Fever*; yet every of them may be accompany'd with it, according to the Nature of the Distempers to which the Difficulty of *Breathing* is owing. Nay, it often happens, that an *uneasy Breathing* is productive of a *Fever*. Thus, for example, when the *Lungs* are straiten'd or pressed upon, and thereby a *Peripneumonia* induc'd, the Difficulty of *Breathing* that follows upon it occasions a *Fever*, which is always accompany'd with an Inflamation in the *Lungs*. We are likewise to take notice, that Difficulty of *Breathing* is either *Idiopathetical* or *Sympathetical*, *i. e.* an essential or primary Distemper, or caused by consent; and that the first may be continual, and without interruption, if it is meerly owing to an Indisposition of the *Lungs*, and also the second, if its *Cause* be continual.

But

But if it affects the *Lungs* periodically, and by way of *Paroxyſm*, the *Aſthma*, &c. muſt be *ſympathetical* and *periodical*; and an *eſſential Aſthma* may be likewiſe *periodical*, as often as the Cauſe to which it is owing, is at certain times taken off and mitigated.

This being premis'd in purſuance of our purpos'd Deſign of enquiring what's *preſag'd* and *pretended* by the various Appearances of *Reſpiration*; it will in the firſt place be granted, that (whatever the Diſtemper be) when *Reſpiration* is eaſy, and little different from that which is natural, there is nothing more encouraging to the *Phyſician*, or promiſing to the *Patient*; inſomuch that it tells us, that the *Heart* and *Lungs*, the *Diaphragma* and *Pleura*, the *Muſcles* of the *Breaſt* and *Ribs* are ſound and unaffected. But in *Feveriſh* Diſtempers, we muſt be aware, that their *Malignancy* do not impoſe upon us: For, in ſuch, the *Reſpiration*, *Urine*, and *Pulſe*, as was above obſerv'd, often reſemble that of one in Health.

Sometimes the *Reſpiration* is *loud* and *quick*, in which ſtate much *Air* is often inſpir'd and expir'd at Mouth and Noſe very hot and fervent. This manner of *Breathing* may be commonly obſerved at the beginning of hot and continual *Fevers*, Invaſion of the Small Pox, and *Peripneumonick* Diſtempers. For, in the *firſt* of theſe, *Reſpiration* comes to be ſo uneaſy and difficult, by reaſon of the unuſual quantity of hot and fervent Blood running through the Veſſels of the *Lungs*, where its Parts are rarefied, and preſs ſo much upon

the sides of their Channels, that they must be continually *expanded* and *distended*, and their *Nisus* to recover their first state, overpower'd and rendred ineffectual. Hence it is, that in this case, to be eas'd and refresh'd, and to mitigate the Heat, and take off the *Tension* of the Vessels, one fetcheth his *Breath* so often, and the *Respiration* is so *quick*, and also *loud* and *great*; chiefly, because the *Blood* being yet brisk and spirituous, and not impoverish'd by the continuity of the *Fever*, there is an unusual *Afflux* of Animal Spirits into the *Muscles* of the *Breast* and *Diaphragma*, &c. and thereupon are the more contracted, and the *Cavity* of the Breast enlarg'd, and the Sick blows and pants after *fresh Air* for mitigating his inward Heat and sense of his Pain, caused by the Pressure of *Blood* upon his *Lungs*.

Neither is this *manner* of *Breathing*, in the just mention'd, or any other sort of *Fevers*, accounted one of the most dangerous *Signs*, while the *Fever* is *new*, and the Blood, as we said, brisk and spirituous, and Nature strong and vigorous, at least not much impaired and weaken'd. But here 'tis to be noted, that a large *Dilatation* of the Region of the Breast, is not always to be taken for a *loud Breathing*; for this often happens to those whose *Chests* are narrow, or are affected with some inward *Tumor*, in which cases, the quantity of *inspir'd Air* is very inconsiderable.

And as to *Pulmonary* Distempers, 'tis as plain as 'tis certain, that upon the first invasion of them, the Inflamation is inconsiderable,

rable, and the *Lungs* may yet in ſome meaſure be *expanded*, notwithſtanding the *Stimulus*, Pain, and Heat, wherewith they are affected; and therefore the *Reſpiration* may be *loud* and *frequent*, for the Reaſons juſt now alledged. But in the progreſs of thoſe Diſeaſes, the *Stimulus* and Pain, the Inflamation and *Tumor*, encreaſe by degrees, and harden the *Lungs*, and render them unfit to be *expanded*; ſo that the *Reſpiration* becomes *low* and *quick*, than which there is no *Sign* more *fatal*, not only in this, but alſo in other Acute and *Feveriſh* Diſtempers: For now the *Lungs*, through which the Blood ſhould often circulate in a little ſpace of time, are ſtuff'd and impacted; and therefore whatever is leſs *fluxible* in this Liquor, muſt ſtagnate in the *Pulmonary Veſſels*, whilſt that which is more *thin*, goes ſome *rounds* in *Circulation*, till it be quite ſpent, and the Sick breathes no more.

Reſpiration that's *low* and *ſlow*, is common and ordinary to thoſe in a *Delirium* (*a*), and a *Difficulty* of *Breathing* in that Diſtemper is mortal (*b*); eſpecially when the *Diaphragma*, one of the Inſtruments of *Reſpiration*, is inflamed, and therefore cannot be *contracted*; ſo that the Cavity and Motion of the Breaſt muſt be leſſer than is uſual, and conſequently the *Reſpiration low*. And when the Diſtemper has continued a long time, beſides the *Inflamation*, there muſt be a great expence of *Spirits*, without which the Motions of the Breaſt cannot be exerted; and therefore the *Breathing* muſt likewiſe be *ſlow*, ſometimes

(*a*) Hipp. 1. prog. 24.

(*b*) Aph. 50. §. 4.

* Aph. 68. §. 4. *interrupted* and *doubled* (*i. e.* convulsive *) and accompany'd with Groaning, Sighing, Expansion and Motion of the *Nostrils*.

This *low* and *slow Respiration*, thus described, is deservedly called the *Cold Breath*; and tho it be hardly observable, yet 'tis most manifest in the Motions and Heavings of the Shoulder-blades and Breast, that the Bed-clothes are sensibly lifted up, and the Nostrils dilated, while there is little or no *Respiration*, and in a little time none at all. Thus ends the *Animal Life*.

The appearance of *Suffocation* in *Hysterick Fits*, is yet a *Problem*. In this Distemper, *Respiration* is not only *vitiated*, but sometimes altogether *interrupted* with Coldness all over the Body, with an Interception of the Voice and Intermission of the Pulse, want of Sense and Motion, that those that have been thus affected, have been taken for dead, and dressed for Interment. Now tho it should be granted that this *Difficulty* of *Breathing* were owing to Narcotick *Flatus's*, arising from the *Abdomen* straitening the *Diaphragma* and *Lungs*, as happens in a flatulent *Asthma*; or, that the strangling and compression of the *Throat* should proceed from poisonous and malignant Vapours, as some are pleased to affirm; (for as to the rising of the *Uterus* like a little Globe or Ball, another cause of this Appearance assign'd by *Hippocrates* (*a*), *Fernelius* (*b*), *Eustachius Rudius* (*c*), and others, is inconsistent with *Anatomy*) or if we should allow it to proceed from a Confusion of the Spirits hur-

(*a*) Lib. de Nat. Mulier.
(*b*) Lib. 6. Pathol. cap. 16.
(*c*) Lib. 2. Pract. cap. 51.

ried

ried disproportionally upon this or t'other Part, causing Convulsions and Pains, *&c.* according to *Sydenham*, but contrary to the Laws of *Animal Oeconomy*; yet still the Difficulty remains, how one can live so long a time without any apparent *Respiration*, and under the deadly *Symptoms* just mentioned.

'Tis true, that the *Muscles* that serve for the Motion of those Parts where is least resistance, for most part want *Antagonists*; of which sort are those of the *Breast* and of the *Heart*, into which, however more or less the Flux of the Animal Spirits is obstructed, the Motions of the Heart and Breast must be more or less *weak* or *strong*, and consequently the *Respiration* more or less vitiated. But if there be a *total Obstruction* of Spirits, there can be no *Respiration* at all; and so long only we can live without *Respiration*, as without the Motion and *Circulation* of the *Blood*, and that's a very inconsiderable time: For when the *Muscles* of the Breast are but a little contracted, its Cavity must be the less, and the quantity of *Air*, and that of the Blood admitted into the *Lungs*, proportionable; but when the Portion of *Air* is so little, that it is ineffectual for promoting the Motion of this inconsiderable Portion of Blood through the Capillary Channels of the *Lungs*, there it must stagnate, and there is no more Circulation. But after all, this *Appearance* is fairly accounted for by the Learned Doctor *Pitcairn* (*a*).

(*a*) Dissert. de causis, &c.

CHAP. XII.

Of Prognosticks taken from Convulsions, Privation *of* Speech, *and* Alterations *of the* Voice.

THat this frightful Distemper is an involuntary *Contraction* of the *Muscles*, by which the Parts affected are determined to a constant and unmoveable Posture, whilst the *Mind* and *Senses* are intire, is very obvious, and that *Convulsive Motions*, or *Epileptick Fits* (for they are distinguished from a true *Convulsion*) are likewise owing to an involuntary Contraction of the Muscular Parts, but oftner accompany'd with a Failure of the *Mind* and *Senses*. But tho' both be ascribed to the same Cause, the difference between them is remarkable in this, that a *true Convulsion* is a continual and *uninterrupted* Contraction of the *Muscles*, and that *Convulsive Motions* are *alternate*, interrupted and invading at certain times, and *periodically* accompany'd with an Interception or Privation of all the *Senses* external and internal, a sudden falling down, with gnashing of Teeth, and concussion of some of the Parts, swollen Eyes, strangling in the Throat, and difficult Breathing, an involuntary Excretion of Filth and Urine, foaming at Mouth,

Mouth, at the end of the Paroxism, and a forgetfulness of every thing that happned.

Now as to the first of these; namely, the appearance of a *true Convulsion*, which only comes to be here considered; 'Tis plain, that when a greater than usual quantity of *Spirits*, are involuntarily determined into this or that Muscle (be the Cause what it will) it must needs be contracted and contained in this Posture by the Power of the *Liquid*; because, the *Will* is not in a Capacity to make the requisite *Æquilibrium* by actuating the *Antagonist Muscle*, and therefore the place affected must be perpetually immoveable and inflexible.

But to what this irregular Motion of the *Spirits*, and the Effects of it is to be ascribed, seems to be not so plain, by reason of the different Accounts we have of it, occasioned perhaps by the mistaken Sense of that remarkable *Text*, *Convulsio vel a repletione fit vel ab inanitione, ita vero & singultus* (*a*). For, *Galen* apprehending this to be meant with respect to the Nerves only, has probably given rise to the different Opinions that are had concerning the immediate *cause* of *Convulsions*. Whereas there is nothing more certain than that *Hippocrates*'s Sense of this *Text*, implies a *Repletion* or *Emptiness* and *draining* of the Sanguiferous, and other Vessels of the Body, from which that of the Nerves, as well as other Consequences of it, that is, all sorts of *Convulsions*, naturally results. This is very plain from the infinite number of Observations which we owe to this

(*a*) Aph. 39. § 6.

this *Great Man*, concerning this Distemper, he having with unwearied Patience and Diligence in tracing the Foot-steps of Nature, carryed them farther than any that went before him, or yet has come after. Neither was it unknown to him, that *Convulsions* were sometimes caused by a *Stimulus* of the *Nerves*; but withal, as a Mediate and remote Cause only, *i. e.* an afflux of a greater than usual Quantity of Animal Spirits into the Part affected, so that whatever the *Stimulus* be, by which a *Convulsion* is produc'd, it must imply and be reducible to *Repletion*.

Retaining then to the antient Account of *Convulsive* Distempers, as caused by an Universal *Repletion* or *Emptiness*, and draining of the Vessels, and consequently those of the Nerves and Muscles, 'twere no hard Matter (if it were not besides our purpose) to account for the various Sorts and *Appearances* of *Convulsions*, from the excellent Observations of the *Great Bellinus*. May it be allow'd only to observe, that, *Convulsions* must be the necessary and natural Effect and Produce of an excessive *Repletion* and *Emptiness*, *Humidity* and *Dryness* of the Parts so affected.

Thus, for Instance, When the Body is drain'd by some excessive *Evacuation*, as *Blood-letting*, *Hæmorrhages*, *Purgative Medicines*, *Diarrheas*, *Dysenteries*, and the like, the Vessels thereupon become empty and drie, and their sides fall together, and come nearer one to the other; so that the remaining

ing part of the Liquids; eſpecially the Blood and Spirits ſeparated from it, muſt be altered and chang'd from their Natural State, by which the Nerves are ſhrunk, contracted and ſhorten'd (however this Doctrine be rejected by the Learned *Borrellus*; (*a*) chiefly because, *ſays he*, the Nerves in a living Body have never been obſerved to be dried and withered, and that *Convulſions* cannot be aſcribed to *Repletion* of them, or an exceſſive Moiſture and Humidity, becauſe 'tis their Natural Conſtitution) and *Convulſions* brought upon the Part; eſpecially, when this dryneſs of the Nerves is accompanied with an unuſual Heat; for, then the *Spirits* are the more inflamed and active, and the *Convulſion* or *Contraction* the greater.

(*a*) Cap. xx. prop. 212. par. 2.

But on the other hand, *Convulſions* are ſometimes owing to an unuſual *repletion* or *fulneſs* of the Sanguiferous and other Veſſels; ſo that their Liquids being ouz'd, or otherways inſinuated into the Interſtices of the Fibres which conſtitute the Nerves; theſe are forthwith rendred flaggy and relax'd, ſhortned and contracted, by the ſtuffage of moiſt and watry Parts entring their little Cavities; probably after the ſame manner, that Cords or Strings of Muſical Inſtruments are affected by the inſinuating Particles of moiſt Air and rainy Weather. Thus the Fibrous and Nervous Parts, are equally contracted by too much *Humidity* as well as by exceſſive *Dryneſs*.

And

And reducible to this, are those *Convulsions* which are caused by gross, viscid, cold, and Phlegmatick Humors in the Blood; from which, no Spirits can be separated, but such as are sluggish and unactive, and therefore readily stagnate or cling to the Nerves, by which, these are in a manner swelled and contracted, and must continue to be so, especially when the finer Part of the Blood being rarified, expires, and the grosser Parts together with gross Viscid and cold Humours, are detained in the Fibres. *Convulsions* that are owing to this *Cause*, and those occasioned by a *Laxity* of the *Fibres* after some time, terminate in *Palsies*. or Lethargies

Thus we have seen, after what manner *Convulsions* are sometimes caused by a *Plethora*, and sometimes by an *Emptiness* of the Vessels or Liquids contain'd in them. But, it yet remains to be observed, that there are some sorts of this Distemper; which, tho' they seem to be rather owing to some other than the just mentioned Causes, are nevertheless reducible to the one or t'other. Such as are those that are caused by a *hardness* and *thickness*, or Compression, and unnatural Conformation of the *Fibres* and the like, by which these are rendred unfit for Muscular Motion. And 'tis likewise to be observed, that, a *Convulsion* or *Contraction* of one *Muscle*, is often caused by a Relaxation or *Palsie* in its *Antagonist*, become unapt to make a due *Equilibrium*; or, the affected Muscle is so frequently contracted, that the *Vibration* is hardly perceptible, and there-

therefore ſeems to be continually immovable. Now, any one of the Muſcles may become *Paralytick* by an obſtruction in its Nerves, and the *Animal Spirits* may be derived and determined towards the *Antagoniſt*, by which it muſt be continually *contracted* the quantity of the *Spirits*, being greater than is uſual.

Again, 'tis plain, that only ſuch *Convulſions* that are cauſed by a diſorder in the *Brain*, are accompanied with a failure of the *Mind* and *Senſes*. But when the Arteries of the *Brain* are preſſed upon or are obſtructed, the *Spirits* ſeparated from the Blood (if there be any Separation at all) and deriv'd into the Muſcles, are dull and unactive, and the *Convulſions* ariſing from this *Cauſe*, muſt be accompanied with the leſs Vivacity of the *Mind* and *Senſes*. This is obvious from the unuſual Poſture of our Legs, or any other Member, by which, the Chanels of the Blood and Spirits are preſſed upon, and their *Liquids* obſtructed in their Motion. For, the parts forthwith become torpid and ſtupified, and unfit for Muſcular Motion.

And, *Convulſions* which come upon *Wounds*, *Contuſions*, *Inflamations*, a *Puncture* or cutting of the *Nerves*, and the like, are always accompanied with *Pain*, i. e. a *Stimulus*, which cauſeth a violent and plentiful *flux* of *Spirits* into the Nerves of the affected Part, and thereupon muſt be *contracted*, and a *Convulſion* occaſion'd, eſpecially, when theſe Diſtempers and Diſorders are likewiſe accompanied with an *Inflamati-*

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on and *Heat*, by which, the *Spirits* are rendred the more fluxible, and their Chanels exceſſively dry and *Contracted*. But ſuch *Convulſions* as are owing to a *Stimulus*, are not Continual; neither are *Convulſive Motions* always produc'd by it, or only by ſharp and acrimonious Humours, but alſo by thoſe that are cold, torpid and viſcid, invading this or that Member *periodically*, without inducing a *failure* upon the *Mind* or *Senſes*, unleſs they have an immediate Connexion with the *Brain*.

This Account of Convulſive Diſtempers being (as was neceſſary) premis'd, the *meaning* and *import* of *Hippocrates* his Obſervations concerning them are the more fairly pointed at, and may be viewed under theſe two Heads; namely, ſuch *Convulſions*, as have been accounted *bad Signs*; and, 2*dly*, Such as are *Pernicious* and *Mortal*.

Thus, *Convulſions* are *dangerous* when they come upon,

Aph. 9. § 7. *Great Hæmorrhages of Blood.*
Aph. 1. § 5. *Immoderate Evacuations.*
Aph. 18. § 7. *The Iliac Paſſion.*
Aph. 2. § 5. *Immoderate Watching*; *and,*
Aph. 57. § 4. *Immoderate flowing of the Menſtrua.*

And *Pernicious* or *Mortal* when they come after,

Aph. 25. § 7. *Taking of Hellebore.*

Aph.

Aph. 10. § 7. *Immoderate Purgations by Medicines.*

Aph. 26. § 2. *The Infliction of Wounds*; *and,*

Aph. 66. § 4. & in Coac. Text. 269. } *Upon acute Fevers, but leſs dangerous to Children.*

Hence it is plain, that, *Convulſions* cauſed by *Emptineſs* of the Veſſels are more *dangerous*, than thoſe that proceed from a *Plethora* of *Humors*; eſpecially in *Fevers*, after ſome notable Evacuations. For, thoſe that are owing to *Repletion*, and happen in a State of Health, as they invade on a ſudden (by which they are known from the other) ſo likewiſe they are carried off, either upon the acceſſion of a *Fever* (*a*), or a brisker Circulation and Motion of the *Blood*. (*b*) Aph. 70. § 5. And, Generally ſpeaking, *Convulſions* in *Children* proceed from this *Plethora* of Humors and Crudities in the Stomach.

Reducible to this of *Convulſions*, is that of *HICKOPS*, which is nothing but a Convulſive Motion of the Stomach, or an intenſe Vomiting, or Semblance of it, often happening to old Men after large Evacuations by Looſneſs, or exceſſive Vomiting, *&c.* and therefore accounted among the moſt dangerous *Signs*, but *portends* no ſuch thing, when it comes upon Surfeits, exceſs in Eating and Drinking, or cauſed by ſharp and corrupted Humours. When this Diſtemper comes upon ſharp and continued *Fevers*, as it

it speaks plenty of Malignant Humours, which irritate and *Stimulate* the Internal Coat of the Stomach: so likewise it is often followed by *Death*, as well as when it happens in *Dysenteries*. And it is too often *fatal*, when it comes after excessive Vomiting, and accompanied with a *redness* in the *Eyes* (*b*). For, it signifies a Stagnation of the Blood, or an Inflammation of the *Brain*, or part affected. All *Hickops* in Old Men are dangerous.

(*b*) Aph. 3. § 7.

Sometimes they come upon a *Jaundice*, and then the Stomach seems to be loaded and irritated with *Bile*, which abounds in the Neighbouring Parts, as well as all the Body over. But in this and the fore-mentioned Cases, the preceding and concomitant *Signs* are to be observed, in forming just *Prognosticks* concerning this Distemper. For, *Mortal Hickops* are always accompanied with other *Appearances* and *Symptoms* equally Pernicious; such as cold Sweats, a *Coma* or Lithargy, loss of Speech, and such like already Mentioned.

Having mentioned the *Loss* and *PRIVATION* of *SPEECH*, which every one knows to be a Mortal and Pernicious *Sign*; It may not be amiss to consider, after what manner this happens, and what are the apparent and distinguishing Differences of the *Voice*, which sometimes go before it. 'Tis plain, that the Substance of the *Brain*, is so very soft and tender, so nice and curious in its *Make* and *Fabrick*, that 'tis soon disordered; and by any

any violent concussion of, or pressure upon its Vessels, *those* of the *Nerves* whose Extremities are centered, complicated and twisted in it, must be confounded and sometimes relax'd, and the adjoining Parts, such as are the *Tongue*, and other Organs of *Speech* and *Voice*, by reason of their Dependance and Continuity, disabled from performing their Functions.

But this is not all, For, a right State and due Constitution of the *Lungs*, *Wind-pipe* and *Throat*, and admission of the *Air*, is no less necessary than that of the *Brain*, *Cheeks*, and *Lower Jaw*, &c. for an easy and natural Formation of *Words* and *Sounds*: and when one or more of either are wanting or defective, the *Voice* must necessarily be *vitiated*, and different from that which is natural, or altogether *lost* and *intercepted*. Hence it is, that the *Voice* is sometimes *Hoarse*, *Squeaking*, *Sharp*, *Trembling*, *Low*, *Stammering and Slow*, &c. all which Differences deserve to be carefully considered in every Distemper, especially those that are *Feverish* and Acute, because they fairly point out to us the State and Condition of the Sick, as every Sagacious Physician well knoweth.

Thus, (to advert upon some of them) the Voice becomes *Hoarse*, upon drying up of the Natural Moisture of the *Throat*, and adjacent Parts by a *Feverish Heat*. Or, it proceeds from viscid and congested Matter, by which the *Surface* of those Parts become rough and unequal; for, so it happens in

the *Small-pox*, upon breaking forth of the Pustles, and when one in this Distemper speaks freely and naturally, 'tis a certain *Sign*, that there is no eruption of the Pustles upon the *Surface* of the *Throat*. But this by the bye.

Sometimes one speaks as if he were *strangled*, and this always suppose's a Contraction or Diminishing the Natural Capacity and Amplitude of the *Larynx* or *Wind pipe*; Or, that the *Air* is taken in and expelled with a greater than usual *Impetus*. For, we observe this *Sound* of the *Voice*, when we endeavour to take in the *Air* suddenly, (for it resembles *Snorting*, being caused by a tremulous Motion through the Nose and Throat) and in a great quantity, for expelling the *Blood* stagnated in the *Heart* or *Lungs*, by reason of its *Lentor* and *Viscidity*, or whatever other Cause. For, when this *Lentor* is taken off, or the Blood is expelled the *Heart*, or deriv'd into the *Pulmonary Vein*, the *Respiration* forthwith becomes *easy*, and the *Sound* of the *Voice* more Natural.

Again, a *Sharp* and *Squeaking Voice*, is sometimes caused by an Inflamation of the *Diaphragma*, which communicates its *Heat* to the *Lungs* by reason of their Vicinity, and thereupon their Membranes either become too much flagged and relax'd, or too dry, and consequently more disposed to *Vibrate* the *Air*, and expel it thro' the

the *Wind-pipe* and *Throat*, which likewise are supposed to be distended and rigid, and therefore the *Sound* and *Voice* is rendred the more *Sharp*. And,

Lastly, One becomes altogether *Speechless*, when the *Lungs* or those Places adjoining to the *Larynx*, are so much inflamed, that a liberal Passage for the *Air*, so necessary to moderate the *Voice*, is altogether obstructed. Or, when the Muscular Motion of the *Tongue*, *Cheeks*, *Throat*, and other *Organs* of *Speech* become defective, either by an obstruction of Animal Spirits, or want of them after a long continued Sickness; Or, a *Convulsion* and irreparable *Relaxation* of those Parts.

From what hath been said, Every one may readily conceive the *Danger* that attends a vitiated *Voice*, and the fatal Consequences of that which is altogether *Intercepted* and *Lost*; especially, when accompanied with other bad Symptoms. And, that the danger is less, when either of them happens upon an Excess of Joy, Fear, Suffocation in Hysterick Fits, Excessive Drinking, Worms, Disorders of the Stomach, Infliction of Wounds and such like.

But it highly deserves to be noted, that, one becomes *Speechless*, either by reason of an excessive Afflux of *Lymph* or *Saliva* into the Glands of the Mouth, by which the Fibres of the *Tongue* are swelled, relax'd,

and flagged and thereupon rendred unfit for Motion and Modulating the *Voice*, and the same Effect happens upon an Excessive *Heat*, by which the Moisture is dried up and consumed, and the Fibres so much contracted, that one cannot speak or manage his *Tongue*. And therefore the *Loss* of *Speech*, is always to be consider'd with respect to the other Concomitant *Symptoms* of the Distemper.

CHAP.

CHAP. XIII.

Of Prognosticks *taken from the* Appetite, Colour *of the* Face *and* Eyes, Cheeks *and* Tongue, *and adjacent Parts.*

SOmetimes the *Appetite* is so keen, sharp and devouring, that, it can hardly be satiated: Thus, Teeming Women, and Maids in the Green Sickness, who are mostly Subject to this Distemper, are greedy and ravenous after the most absurd things; as Earth, Clay, Lime, cold Cinders and the like. As those of the other Sex, are likewise sometimes affected with the *Fames canina*, *Pica* and *Malacia*. But, whether these Distempers be owing to bad Humours congested in the *Stomach*, or to a mutual *Contact* of its Sides, I shall not determine, but 'tis beyond doubt, that, the more the Stomach is emptied of that *Mucus* and Viscidity that's natural to it, the keenness of the *Appetite* is the greater. And, an Excessive Hunger, always supposes a Consumption of the natural Moisture of the Body and Liquid of the Nerves, both which, are owing to want of Blood, (by which our Bodies are repaired) or, when its Quantity is diminished by the Exercise of the *Mind*,

in which there is a vast expence of Spirits, and also of the *Body*, in Muscular Motion. For, then there is a Consumption both of *Blood* and *Spirits*.

But 'tis far otherwise in a State of *Sickness*, in which, tho' there be a great Consumption of the Blood, and consequently of Spirits generated or separated from it; yet the Dejection of *Appetite* is sometimes so great, that one Loaths, and has an aversion to that which was swallowed down with Pleasure in time of *Health*. This may be justly attributed to an unhappy Constitution of the Blood, from which, bad Humors being separated and derived into the Glandules and Cavity of the *Stomach*, the *Appetite* is thereby not only weakned, but also an *Uneasiness* and *Pain*, especially, when these Humours fall upon its Coats and Membranes brought upon the *Mind*, and to avoid a greater, the aversion to Food becomes so great, that the sight of it is nauseous and uneasy. And,

Whatever be the Distemper, in which the Blood cannot be repair'd and supplied, the Sense of Hunger, which, in a State of Health naturally follows upon a Consumption of the nutritious Juice and Spirits, becomes more and more the less, by how much one is weakned by the violence of his Disease, and as his Blood and Spirits are exhausted; because, 'tis *Mediantibus illis*, that the Sense of uneasiness in Hunger, is communicated to the *Mind*. And, the voracious and greedy Desire after Food, which we observe after long *Sickness* and some time before ones *Death*,

Death, seems to be owing only to a random *Flux* of the few remaining Spirits into the *Stomach*, by which, its Fibres and *Tone* are a little restor'd, but their Motion in this State, being disorderly and irregular, they make no long stay there, and then the Sense of Hunger goes off, and the Patient dies upon his last Morsel.

Hence 'tis plain, that it must be a *good Sign*, if the *Appetite* of Sick People comes near to that which was usual in a State of Health; Especially in Chronical Distempers, and that a prosternation of the Appetite in the same Distempers must be *dangerous* and *pernicious* (*a*) if accompanied with sincere *Stools*, i. e. crude and unmixed Humours without *Mucus* or *Serum*. And, no less *omenous* is a *Dejection* of *Appetite* accompanied with a *Fever*, in long continued Distempers of the *Intestins*. And also, when an exquisite Hunger proceeds from immoderate Purgations, or, extream Heat in the Stomach, which suddenly grates and consumes the Food without nourishing the Body, as it happens to those who are Lean and *Hectick*. For, the *Chyle*, tho' prepar'd in the Stomach, is obstructed in the *Mesaraick* and *Lacteal Veins*; so that a small and inconsiderable Portion of it is derived into the Mass of Blood, the better part of it either remaining in the Intestins, or is thrown out by *Stool*. Which probably, may account for the continual Loosness, Leanness, and keen *Appetite* of *Hectick* People. But, if the *Appetite* that was weak and sunk comes to be very keen all on a sud-

(*a*) Aph. 6. § 7.

sudden, without any *Crisis* or mitigation of the Disease, the Patient as just now was observed, dies soon after. For it denotes a *Disorder'd Brain*, an irregular Motion of the Spirits, and an irrecoverable Loss of the sensitive Faculty.

DIFFICULTY of *SWALLOWING*, is no less *fatal*, after a long continued Sickness and Weakness. For, in the action of *Swallowing*, the inclination of the Mind and the Muscular Motion of the *Tongue*, *Cheeks* and *Throat*, are equally necessary. But when the Muscles of neither of these can be actuated, 'tis plain, that there is a want and defect of *Animal Spirits*, or, that the *Muscles* are irreparably *relaxed*, and can never be restored.

THIRST, and the want of it, and what's *portended* by both, in whatever Distemper, is yet more explicable. For, the one is owing to a *Plethora*, and the other to an *Emptiness* of the Vessels. Only, sometimes it happens, that in the first, namely, a *Plethora* of the Vessels; the Humors are so viscous in the *Arteries*, by which, the Salivary Matter is derived into the Glandules of the Mouth, that no *Lymph* or Spittle can be separated from the Blood; and therefore those Parts by want of necessary Moisture become dry, and the Sense of it communicated to the Mind is *Thirst*. But, if the other Parts of the Body are not dried up after this manner

manner, but moisten'd by their *Lymph*, the *Thirst* is not said to be universal.

But *Thirst* is oftner the Effect of *Heat*, which attenuates and evaporates the natural Moisture or *Lymph*, empties the Vessels, and drains the Blood of that Matter which is converted into *Spittle*, and strain'd into the Glandules of the Mouth, which thereupon become intensly dry, and the Patient is thirsty: And if this Liquid of the Salivary Glands is not totally exhausted, the remaining part becomes viscous, and variously colour'd and compounded, according to the Degrees of *Heat* in the *Blood*, and proportion of *Lymph*. But this Effect of *Heat* and *Fervency* of the *Blood* in *Feverish* Distempers, is most remarkable upon the *Surface* of the *Tongue*, which receives the dry and hot Particles, which evaporate from the Cavities and *Surface* of the *Oesophagus* and *Aspera Arteria*; and probibly too by reason of the Continuity of Parts by the *Heat* that comes from the *Breast* and *Abdomen*. Upon this account, the *Tongue* must become dry and thirsty, especially upon its Surface, and its Fibres must be contracted, and by reason of their Weakness and Fineness, soon broke and pull'd asunder, and at last, chapt and furrow'd. But more of this below.

Thus, *Thirst* being sometimes owing to a *Lentor*, or gross Humors in the Blood, obstructing the Afflux of *Lymph* into the Glands of the Mouth, and sometimes to a consumption and exhausting of it by an intense *Heat* and *Fervency* in the Blood; 'tis fairly accountable

countable, after what manner the *Thirst* of those in *Malignant Fevers* is sometimes disproportioned to the *Feverish Heat*, and why tho the Blood be sometimes intensly hot and *fervent*, there is little or no *Thirst*: For, in this last case, the Blood may be dissolv'd, and its Constitution entirely alter'd (whilst the *Heat* continues) and thus render'd less *perspirable*: So that some Parts, especially the Substance of the *Tongue*, may receive sufficient Moisture and Humidity from the *dissolved Blood*, whilst its *Surface* may appear to be *dry*, by reason of the hot Particles which it continually receives from the adjoining Parts; namely, the *Aspera Arteria* and *Oesophagus*. But, tho' the Blood be not dissolv'd, and the *Tongue* is dry and parcht, not only in its *Surface*, but also throughout its Substance; yet, who knows not, that one in this Distemper may have no sense of Thirst, if the Nerves likewise be so much dried up and shrunk, or their Canals so much obstructed by gross and viscous Humors, that the *Sense* of it cannot be communicated to the *Mind*.

Hence 'tis obvious, that to have great *Thirst* in *Fevers*, and Diseases which come from *Heat* and *Inflamation*, is usual and natural, because *Heat* attenuates the *serous* part of the Blood, and evaporates the *Lymph* or Matter which is converted into *Spittle*, by which the *Glands* of the *Mouth*, *Throat* and *Tongue*, are moisten'd. But, to want *it* in those Distempers, must be a *dangerous* and *pernicious Sign*, either as 'tis owing to a *Dissolution* of the *Blood*, or to a Dryness and Contraction

traction of the *Nerves*, or an Obstruction in their Canals just now mentioned; or lastly, to a Moistening of the *Tongue* by the humidity of the Brain, as was antiently believed. And no less *fatal* is it, when the *Thirst* is so great, that nothing can allay it, and when one has an ardent desire after odd and unaccustomed Liquors, and inconsistent with the State and Condition of the Sick, and nature of his Distemper; as Vinegar, Spirits of Wine, and such like.

The *Colour* of the *FACE*, upon the Invasion, and throughout all the *Periods* of Diseases, being so remarkable, so often and variously chang'd from that which is natural; sometimes by degrees, and then all on a sudden, sometimes at the beginning, and sometimes in the *Status* of the Distemper, and sometimes when there is none at all, excepting that of the *Passions* of *Anger*, *Joy*, &c. it may not be amiss to enquire into the productive Cause of so many various *Appearances*, and what they portend and prognosticate.

That the *high red Colour* of the *Face*, is caused by a *Plethora* and Fervency in the Blood, is evident: For the parts of the Blood being rarefied, its Channels must necessarily be enlarg'd, and the Capillary Arteries *distracted*, whence, some finer parts of the Blood are strain'd or *ouz'd* into the Interstices of the Cutaneous Fibres, by which the Skin of the *Face* is render'd more reddish than is usual, and therefore is believ'd to *presage* either an *Hemorrage* at Nose, or an Inflamation of the Brain, an approaching *Delirium*

and

and Hemorrhoids, and sometimes Convulsive Fits in Children.

This *Colour*, in *Malignant Fevers*, is obvious and usual, by reason of the various and different State of the Blood in that Distemper: For the *Face* looks florid and lively, whilst the *Blood* circulates freely through its Channels, and also the *Spirits* in the Nerves; but in a little time 'tis far otherwise, when both are interrupted, for then the same Person looks pale or livid; but nevertheless may again at the very approach of *Death* recover a brisk and gay Colour. For, by reason of a Defect in the Spirits, the grosser part of the Blood stagnates in the Vessels of the other Parts, whilst that which is more fluxible and thin, is fluent enough in those of the *Face*.

Again, in *Inflamations* of the *Lungs*, and other *Pulmonary* Distempers, the *Colour* of the *Face* is lively and rosy, because the *Lungs* being inflam'd, and their Channels obstructed, the Blood that should circulate in them, must stagnate in the Branches of the *Vena Cava*, which are distributed to the *Face*, whilst the thinner part of it is fluent in the *Arteries*; and therefore the Veins of the *Face* appear to be puft up and rosy colour'd. And, that the Blood of those in this Distemper, should be very thin and fluxible, is very evident. because its grosser Parts are intercepted and congested in the *Lungs*.

The *yellow*, and sometimes *blackish Colour* of the *Face* and *Skin* in the *Jaundice*, caused by an Obstruction of the *Cholidocus* or *Porus Biliarius*,

Biliarius, or Glands of the Liver, by glutenous and calculous Humors, intercepting the *Bile* in its *Flux* into the Intestins, is effectually taken off by salt, volatile and bitter Medicines, unless there be a hard *Tumor* or *Schirus* in the Liver, which is not so easily discussed. The *Colour* of the *Face* observed in those who have been bit by a mad Dog or Viper, and that which comes upon Anger, Hysterick Fits, long Watching, immoderate Purgations and Evacuations, Hunger, and the like, and what's portended by it, is too well known to be insisted on. Only,

The *white* and *pale Colour*, in whatever Distemper, may be observed to signify either want of Blood, or an Obstruction in its Circulation. Thus in Lethargick Distempers, *e. g.* not only the *Face* and *Eyes* are blouted and swell'd, but also the *Face* is *pale*-colour'd, by reason of gross and viscous Blood in the internal and external *Arteries* of the *Head*, which, notwithstanding the violence of its Motion in those Vessels, cannot be deriv'd into the *Veins*, and therefore must stagnate in the *Arteries*, and the *Face* must look *pale*, by reason of the viscous and whitish Humors mix'd with the stagnated Blood: But, when from a *pale*, the *Face* comes to be *livid* and *blackish-coloured*, there is no hope of Recovery. Of this *Colour* are the *Spots* that appear in the *Back*, *Loins*, and other *Parts* of the Body in acute and pestilential Fevers, and those that have died of *Poison*.

There is yet another notable Alteration in the *Face*, which is always *suspected*, *pernici-*

ous

ous or *mortal*, especially when it happens a few days after the Invasion of some acute Distemper, without any apparent Reason; and this is a Compression or Sharpness of the *Nose*, with hollow and sunk *Eyes*, a Stiffness and Rigidity of the *Temples*, Coldness in the *Ears*, Driness and Hardness of the *Skin* of the *Face*, and a greenish, livid or blackish Countenance or Colour. This is the (a) 2 Prog. *Facies Hippocratica (a)*, and not unlike to it is the resemblance of Friends and Relations, that some have observ'd in the Countenances of those in a hopeless Condition.

The *EYES* which we have so often mention'd, in a State of Sickness are consider'd with respect to their Magnitude, Situation, Colour, Motion, Vision, and Splendour. This curious Organ appears to be Globular; but when 'tis divested of its Muscles, it is oblong, and in some manner resembles a Pyramid, having its *Basis* without, and *Point* within. Its *Size* is various and different: The larger is esteem'd the handsomer and more becoming, tho' more expos'd to Injuries from without and within, and not so sharp sighted as that of a lesser Size. Its Soundness is known by its fresh and gay Colour, Fulness, Brightness and Eminency, in looking upon the Light without Uneasiness, in its Muscular Motion, by lifting up and shutting the Eye-lids, and being without Excrements, Tears and Bleardedness, Redness, Dulness and Distortion, *&c.* But the *Eyes* are not here consider'd with respect to their natural Defects, or any foreign Influence, as

hard

hard Drinking, violent Vomiting, and ſuch like external Cauſes; but as influenc'd, chang'd, and alter'd from their natural State by the violence and ſharpneſs of Diſeaſes.

In the juſt mention'd Deſcription of *Facies Hippocratica*, the *Hollowneſs* of the *Eyes* is juſtly taken notice of, becauſe, of all the ſolid Parts, *theſe* are moſt liable to be extenuated, hollow and ſunk, being, that they conſiſt moſtly of Fat and Liquors, which are ſoon exhauſted, conſum'd and flatten'd, making ſuch a *Vacuum* in their *Orbits*, that 'tis evident and conſpicuous, that it being thus with the *Eyes*, the Body muſt be in a conſumptive and dying State.

In ſome acute Diſeaſes, one of the *Eyes* appears bigger than the other, and condemn'd by *Hippocrates* as a *mortal Sign* (*a*): Neither had he a better opinion of *involuntary Tears* (*b*), (of which above) for ſuch muſt proceed from the acuteneſs of the Diſeaſe, by which the Texture of the Glandules is diſſolv'd, and not from any peculiar Affection of ths *Eyes*, or *Paſſion* of the *Mind*.

(*a*) 1 Progn.

(*b*) Aph. 52. § 4.

Neither is it leſs dangerous, when the *White* of the *Eye* becomes *ruddy-coloured* (*c*), or over-run with livid and black Veins. Thus it happens in *Quinſies*, and ſuch like Diſtempers, by reaſon of the Confluence of the *Carotides* and *Jugular Veins*, both which being preſſed upon by the Inflamation, the Blood can have no flux into the *Brain*, nor return from it into the *Lungs*, and therefore muſt ſtagnate in the *Throat*, *Face*, and *Eyes*; upon which they become ruddy, fix'd, and

(*c*) Hipp. in progn.

without

without Motion. And thus likewise are the *Eyes* affected in *Malignant Fevers*, in which the Parts of the Blood being unequal, the grosser part being less fluxible, is detain'd in the *Capillary Arteries*, distributed to the *White* of the *Eye*.

The *rolling* and *vibrating* Motion of the *Eyes* have been observ'd by *Hipp.* in *Coac* to prognosticate an approaching *Delirium*. *Præcordiorum pulsus cum turbatione mentem emovet, idque præcipue si oculi frequenter moventur* *. For this Motion is owing to the *Impetus* and violent Motion of the Blood, and irregular Afflux of a greater than usual Portion of Spirits into the *Muscles* of the *Eyes*, by the Pressure of the *Arteries*. And when the Heat of the Blood is excessively great, the Nervous Liquid is irregular in all its Motions; and therefore the Parts into which it is deriv'd become *tremulous* or *convulsive*, and the Representation of *Species* made to the *Mind*, *confus'd* and *disorder'd*.

* In Progn. pag. 38.

Every body knows that 'tis an *omenous* and mortal Sign, when the *White* of the *Eye* is seen between the *Eyelids* †, if this manner of sleeping be not usual, or owing to immoderate Evacuations, or Worms, Children troubled with them being sometimes observ'd to sleep with their Eyes half open: For this *Appearance* can be ascrib'd to nothing else than to a defect of the *Nervous Liquid*, whereby the circular Muscles of the *Eyes* are rendred so soft, relax'd and flaggy, that they cannot be duly contracted, actuated, or shut. But the *Distortion* of the *Eyes*, such as

† Aph. 52. Sect. 6.

as ſometimes is obſerv'd in *Epileptick Fits*, is not attended with ſuch *fatal* Conſequences in that, as in other acute Diſtempers, in which, ſuch *Convulſions* of the *Eyes* are juſtly ſuſpected and pernicious; and when they come to be fix'd and immoveable, there is none but knows, that Death is at hand.

As to the *TONGUE*, 'tis plain and evident, that the ſureſt Signs of the State of the Blood, the great Spring of the *Machine*, are taken from it, being a Collection of an infinite number of Fibres and Glandules, thro' which the morbifick redundant Parts are convey'd, without ſuffering any conſiderable alteration by the way, as they do in other *Emunctories*. And the Divine *Hippocrates* having obſerv'd, that the *Tongue*, by its different *Colours*, points out to us the various and predominant Humors of the Body, it deſerves to be carefully conſidered in all its Affections and Alterations, not only in the *Prognoſticks*, but alſo in the *Diagnoſticks* of Diſeaſes, eſpecially conſidering, that other Signs may frequently deceive us, whereas this ſeldom does.

In a State of Health, the *Tongue* is well known to be *rediſh colour'd*, ſoft, and proportioned, fit for taſting and ſpeaking; but upon the Invaſion of Diſeaſes, it ſuffers a great many Changes and Alterations: For, being an open, ſoft and glandulous Subſtance, it is the more capable of receiving the Impreſſions and Colour of the more groſs Particles, or ſerous Humors and Vapours, or to be dried up and harden'd by the Conſumption

of its natural Moisture and Humidity. So that 'tis readily conceiveable, that it must be a *good Sign* in whatever Distemper, when the *Tongue* is likest to that which we have represented it to be in a State of Health; and that the more it is different from it, so much greater must the *Danger* be.

But the most remarkable *Appearances* of the *Tongue* are its Colour and Driness, Softness, Roughness and Inequality, and that sometimes 'tis covered with hot small Tumors, and sometimes with those that are cold; that 'tis sometimes affected with immoderate Thirst, and sometimes with none at all; that sometimes 'tis so much swell'd and enlarg'd, that it cannot be contained in the Mouth, so that many have been suffocated by it: And sometimes 'tis extreamly diminished by intense Heat and Inflamation, which is no less dangerous. All which various and different Affections of the *Tongue*, being justly ascrib'd to a Fervency in the Blood, and Consumption of its *Serum*, or to an over-great plenty of flegmatick and watery Humors; the *Prognosticks* taken from it will be plain and obvious. Thus,

The *Tongue* for most part is dry in all *Feverish* Distempers; and as the Feverish Heat and Inflamation is increased, so is its Driness, until at last it comes to be withered, hard, and unequal, cleft, ulcerated and black, *&c.* For in every Distemper accompanied with a Fervency in the Blood, the *Lymph* and Humidity of the Parts must necessarily be exhausted, especially that of the *Tongue*, and the

the Fibres every where diſtributed through it, render'd rigid and contracted. Hence is its *Roughneſs*, as its *blackiſh Colour* is probably owing to the *Blood*, which wanting a due proportion of *Serum*, is the more diſpoſed to ſtagnate under its *Surface*; or, the thinner part of the Blood being evaporated, its groſſer Parts thereupon become leſs fluxible, earthy and dry, repreſenting a *darkiſh Colour*.

For the ſame reaſon it comes to paſs, that the *Tongue* is *chaft* and *cleft*: For it's *Surface* conſiſting of a Bundle of Fibres variouſly affected, partly by the defect of *Lymph*, and partly by hot Vapours ariſing from the Breaſt and *Abdomen*, comes at laſt to be ſo much withered, dried and contracted, that they muſt be broken and cleft aſunder.

Now as this State of the *Tongue* fairly indicates that of the *Blood*, 'tis readily conceivable how *dangerous* a *Sign* it muſt be, when one in this condition has little or no *Thirſt*: For as *Thirſt*, as was but now obſerv'd, may be owing to want of *Saliva* and Moiſture in the *Tongue* and *Throat*, dried up and exhauſted by the Fervency of the Blood, or to viſcous and groſs Humors obſtructing its Afflux into the Salivary Glands; ſo when the Heat of the Blood is intenſely great, and the *Tongue* is dry and chaft, without any Senſe of *Thirſt*, the moſt probable Cauſe for this *Appearance*, muſt be aſcribed to the Diſſolution of the *Texture* of the Blood, by which, the Parts in ſome meaſure may be moiſtened, while the *Surface* of the *Tongue* is harden'd and dry, by reaſon of the Heat

and Vapours which arise from the Breast, *Aspera Arteria*, and *Oesophagus*: Or, the Nerves may be so much dried and contracted, that the Sense of *Thirst* cannot be communicated by them to the Mind. Now, whether this or that be the productive Cause of want of *Thirst*, while the Tongue is parcht, dry, and burnt up, the case is deplorable: Or if *Thirst* be taken off (as some will have it) by a Distillation of some serous Humor from the Head, or much sleeping, in which cases 'tis observable, that the *Tongue* is not equally moistened in all its Parts; yet, when want of *Thirst* in a *dry* and *black Tongue*, is not owing to either of these (as probably it is not) a *Delirium* and Death is not far off.

Neither is the *Heat* and *Roughness* of the *Tongue*, either in the beginning or progress of the Disease, more pernicious and mortal than is its *coldness*; for *Death* follows soon after. This Observation, which *Baglivius* tells us was communicated to *Riverius* by *Pecquetus*, was well known to the Antients, and deserves to be carefully adverted to in all inflamatory Distempers, as well as in those whose Bodies have been much ulcerated or extenuated. But this *coldness* of the *Tongue* sometimes happens in *Diarrheas*, without any remarkable coldness in the extream Parts, and those who have been afflicted with that Disease, have nevertheless been observ'd to live several Days in that State.

From what hath been said, 'tis I think readily accountable, after what manner the *Tongue* is so often and variously chang'd and alter'd

alter'd from its natural State and Colour, beſides its Affections already mentioned, to a *Citron*, *yellowiſh*, or any other *Colour*, if we advert to the Vapours that ariſe from the Stomach, the Effects of Spittle, and bilious Particles variouſly mixed with thoſe of the *Air*. And, why in *Lethargick Diſtempers*, the *Tongue* is *ſoft* and *white*, if we conſider, that it is ſoak'd and loaded with plenty of cold and watery Humors, and ſometimes ſo thick, viſcous and clammy, that they bring a Film upon its *Surface*, conſiſting as 'twere of innumerable ſmall Bubbles, like white Froath, as every one knows. And laſtly, why the *Tongues* of thoſe in a *Quinſy* are ſometimes *livid* and *black*, and ſometimes turned inward and *diſtorted*: For the firſt of theſe proceed from ſtagnated and obſtructed Blood in the Veſſels of the *Throat*, and the laſt, namely, the *Diſtortion* and Bending of the *Tongue*, from a *Convulſion* of its *Muſcles* in this or t'other ſide, or a *Relaxation* of their *Antagoniſts*, by an Obſtruction in their Nerves and Arteries.

The THROAT, by reaſon of its Vicinity to the *Tongue*, muſt needs be equally affected with it, eſpecially in acute Diſtempers, and therefore requires the Phyſician's particular care and regard: For when it comes to be *ulcerated*, it as well tells us the ſharpneſs and vehemence of the *Fever*, as when the *Tongue* is *black* and *dry*, both being equally dangerous, eſpecially when accompany'd with other ill Signs.

CHAP. XIV.

Of Prognosticks *taken from* Horrors *or* Shivering, Tremors *and* Palpitations.

AS *Horrors* and *Rigors* are distinguished from one another, only *secundum majus & minus*, so both are known to be a convulsive Motion, or sudden and involuntary Concussion of the whole Body, as *Tremors* are that of a particular Part: And that those are sometimes slow and quick, sometimes weak, and sometimes more violent, happening to us in a State of *Health*, as well as in *Sickness*, upon the Passions of *Fear*, *Anger* and *Love*, entering into *hot* or *cold* Baths, and upon the Representation of things to the *Mind*, that partake neither of *Heat* or *Cold*, such as are ungrateful Sounds, tasting of Stiptick Liquors, eating unripe Fruit, after voiding of Urine, and a thousand such like cases, whilst the Blood is warm and brisk in its Motion, as well as in the *cold Fits* of *Intermitting Fevers*.

But these surprizing *Phænomena* have hitherto been unaccountable, and justly reckon'd amongst those which are yet beyond Human reach. And no less unsatisfying are the *Theories* we have concerning *Horrors* or *Shiverings*, which happen upon the Invasion of most

most *Feverish* Distempers, and the regular *Periods* of those that are *intermitting*. For, tho' the *Appearances* of this Distemper be expos'd to our Senses, and we know them by dire Experience; yet their immediate Cause, and the *Mechanical* account of their Nature, tho' inquir'd into with the utmost diligence, by the most ingenious of the Medical Faculty in all Ages, remains yet to be a *Problem*.

Only it seems to be plain and evident, according to the Great *Bellinus*, that the Sense of *Cold*, and the *Shivering* that follows thereupon, must be owing to a *Lentor* of the Blood and gross Humors impacted in the Capillary Arteries, obstructing the *Motion* and *Velocity* of the Blood, the necessary and essential Cause of *Heat*. For, wheresoever there is not a due Motion of the Blood and Attrition of its Parts, there can be no *Heat*, or where its *Velocity* is least, there its *Heat* must be the less. And seeing in every *Section* of the Arteries, the *Velocity* of the Blood is diminished according to their distance from the Heart, its Motion in the Capillary Arteries of the extream Parts, especially when loaded with Lent and viscous Humors, must be very inconsiderable. Again, when the Blood and heterogeneous Humors mix'd with it, stagnate as 'twere in those smaller Channels all the Body over; the Circulation must be more slow than usual, and at every *Contraction* of the *Heart*, an inconsiderable Portion of Blood is squeez'd into the greater Arteries, and the *Impetus* of the *Heart*, by a defect and want of Spirits, separated only

from viscous Blood, must be considerably weaken'd.

For these Reasons it comes to pass, that the Attrition of the Parts of the Blood must be very little, and consequently the *Heat* diminish'd, *i. e.* a stimulating and pricking Sense of *Cold* is excited over all the Body, especially when the Humors are so gross and viscous, that the *Flux* of the Spirits into the Nerves and Muscles is obstructed, or that their Proportion is not equal to ballance those which have *Antagonists*: For then the one must be *contracted*, and the other *relax'd*, *i. e.* the Motion of the Spirits is irregular, and one in this case must fall a *trembling* and *shivering*, and undergo an universal Concussion in all the Parts of his Body. And for the same Reasons his *Pulse* becomes *weak*, *low* and *slow*, and sometimes *quick* and *unequal*; and by degrees, the Arteries, by reason of the *Cold*, are so much contracted and sunk, and the *Impetus* and *Velocity* of the Blood so much diminish'd, that the *Pulse* at last comes to be almost *imperceptible*.

But this Scene is quickly chang'd, when the warmer Parts of the Blood intangled with the viscous Humors, are disengag'd by the Power and Force of Nature; and when the Fibres which were over-stretch'd and distracted by the Impulse and Pressure of *Blood*, recover their former and natural State (for they always have some *Elasticity* and *Nisus*, unless they be totally contracted and relax'd) upon which the *Texture* of the Humors is dissolv'd, and their Parts separated from one another, and ren-

der'd

der'd more fluxible to be deriv'd with the Blood into the Veins with a greater than uſual Motion and *Heat*, its Moles and quantity being augmented, the Animal Spirits diſengag'd, and the Senſe of a burning Fervency felt in the ſmaller Arteries adjoining to the Heart, and then diffus'd to the extream Parts: And tho' the time that's requiſite for the diſſolution of the Humors, by reaſon of their greater or leſſer Viſcidity, and Communication of the *Heat* to the extream Parts, be uncertain and undetermin'd; for as yet *Heat* and *Cold* are alternative; yet, at laſt the viſcous Humors come to be fluxible with the rarefied Blood, its Circulation is advanc'd, Perſpiration promoted, and the *Heat* continual, exquiſite, and augmented, until it hath diffus'd it ſelf, not only into the Capillary Arteries, but alſo into their greater Channels, and thoſe of the Veins. But,

After many Contractions of the Heart, the rarefied Blood comes to be diminiſhed in its *Moles* by *Perſpiration*, and the exquiſite *Heat* by degrees is render'd more gentle and remiſs, according to the degrees of the Viſcidity of the Humors, by which the *Duration* both of the *hot* and *cold* Fits are determined. And, as in the *cold* Fit, the *Pulſe* was *weak*, *low*, and *ſlow*, ſometimes *quick*, and *unequal*, and ſometimes almoſt inſenſible; now, the Blood being render'd more fluxible, hot, rarefied and fervent, the *Pulſe* becomes *ſtrong*, *brandiſhing* and *quick*, until the viſcous Humors circulating with the Blood be again deriv'd into the Capillary Arteries, by which

a new *Paroxyſm* of *Cold*, and then of *Heat*, accompany'd with the juſt mentioned Circumſtances, and after the ſame manner is commenc'd and accompliſhed in the ſame *Order* and *Time*, until after five, ſix, or more ſuch *Paroxyſms*, the *Lentor* of the Blood be totally taken off, or alter'd and chang'd in its quantity or quality; which muſt needs be the effect of *Perſpiration*, *Rarefaction* of the Parts of the Humors, and their *Circulation* through the *Lungs*, whoſe Structure ſeems to be adapted and contriv'd for this purpoſe.

But the moſt ſurprizing *Phænomenon* of this Diſtemper is the regular Return of the *Paroxyſms*, ſo nicely at certain and determinated *Periods*, Hours, and almoſt Minutes; as if the Time were meaſured by the exacteſt *Pendulum* or Dial; which being ingeniouſly accounted for by the Great *Bellinus* and *Borellus*, in purſuance of our purpoſe, I proceed to obſerve, that

As *Horrors* or *Shivering* uſher in moſt part of acute Diſeaſes, eſpecially *Fevers* of all kinds, continual or intermitting, the Meaſles, Rheumatiſms, Eriſipelatoſe Fevers, Quinſies, Pleuriſies, Scarlet Fevers, the Bloody Flux or Dyſenteries, the Small Pox, and others, the Iſſue and Event whereof cannot be eaſily prognoſticated by the manner of their firſt Invaſion; and ſuppoſing the *Lentor* of the Blood, the productive Cauſe of thoſe Diſtempers, to be ſo *great*, that it cannot be deriv'd from the Arteries into the Veins, or ſo *viſcous*, that its Parts cannot be diſſolv'd, but obſtinately clung to the *Surfaces* of their Channels;

Channels; an univerſal and mortal *Coldneſs* would quickly enſue, the Blood could not be deriv'd into the Muſcles, but muſt ſtagnate in the Brain, and there could be no Separation of Animal Spirits, but an irreparable Privation of the Senſes, external and internal, *i. e.* inevitable and certain Death.

Hence it is, that *Agues* or *Intermitting Fevers* are more dangerous in the *cold* than the *hot* Fit; and if the *Lentor* or viſcous Humors are derivable into the Veins, and ſucceeded by a burning and intolerable *Heat*, the Blood muſt be exhauſted, and the Spirits conſum'd; or, ſuppoſing the *Heat* to be gentle and moderate, and happening to one whoſe Strength is already much waſted by the violence of the *cold Fit*, the Danger however is not ſo great as ſome time after, namely, when the few remaining Spirits are totally ſpent and exhauſted.

But after all, the fatal Conſequences of *Shiverings* in *intermitting Fevers* are oftner to be aſcribed to the Miſmanagement of the Patients, and abuſe of *Medicines*, than to the Genius of the Diſeaſe. 'Tis true, in *former* Ages, this Diſtemper was long and afflicting: 'tis the Happineſs of *this* to have found a ſafe as well as certain Remedy for the Cure of it, namely, the *Peruvian Bark*, which deſerves the firſt place among all the *Medicines* yet known; not only for its excellent Virtue in this, but alſo in the Diſtempers of the *Womb* and Stomach, and many others, when miniſtred by the hand of a prudent and skilful *Phyſician*. And,

Tho'

Tho' the use of it by some is *discontinued*, probably to give reputation and credit to their *Arcanums*, of which the disguised *Cortex* is the *Basis*, and falsely *charged* with all the uneasy Effects of the Distemper, which, if there be any, should rather be ascribed to an undue Administration of it. And others reckon, because it quells the Insults of this Disease, as it were by an occult Quality, and not by sensible Evacuation, that the Matter causing this Disease, and should have been thrown out, is shut up by its astringent Virtue; never considering, that the *Perspiration* and *Sweats* which happen at the end of the *Fit*, have carry'd off the *Febrile* Matter congested in the intermitting Days; and that the Relicts of the Distemper only remain to be ripen'd for another, which by the *Bark* is prevented. And tho' it becommonly said, and perhaps justly too, that *Agues* are taken off by its *astringent Virtue*, yet we know no other *Astringents* indued with the like Virtue. Nay, it cures some, who after taking it, go to Stool as if they had taken some purging Potion. But this by the by.

Agues that come in the Spring are seldom long lasting, so that the eldest Men, or any weak Person, run no great risque by them, unless they be mismanaged by unseasonable bleeding or purging. But *Quartans* are more dangerous and obstinate, and often kill old People, unless they have had it before.

Hippocrates has observ'd to us, that the *Nubeculæ nigræ* appearing in *intermitting Fevers*, signifies and imports, that the *Periods* of

of the cold *Fits* or *Horrors* will be uncertain; and without any order: And that Membranous Urine ſuppreſſed with *Horror*, denotes an approaching *Convulſion*. Blackiſh *Encoremata* tells us indeed, that the groſs Humors are imperfectly concocted, and being the productive Cauſe of *Shiverings*, the time when they ſhall be totally concocted cannot be certainly determined: So that ſuch *Urine* may probably *preſage* their Invaſion to be very uncertain: And that a Suppreſſion of Urine with *Horrors* and *Shivering*, is nothing elſe than a Contraction of the whole Body, or that of the circular Muſcle of the Neck of the Bladder, *i. e.* a *Convulſion* of it. And *membranous Urine*, ſo called, being nothing but viſcid Humors, argues plenty of them to be lodg'd in the Blood, rendering it ſharp and acrimonious, firſt exciting *Horrors* and *Shivering*, and then *Convulſions*, or a violent *Contraction* of the *Muſcles*.

It likewiſe deſerves to be obſerv'd with this *Great Man*, that, *little Sweats* and *frequent Shivering*, ſignify an *Empyema* or *Impoſthume* (*a*). For the internal Parts being ſtimulated and irritated by the Acrimony of the Humors occaſions the *Horrors*; and *Weakneſs*, the little *Sweats*. He likewiſe had a favourable Opinion of ſuch *Horrors* that happen'd upon *continual Fevers* on a *Critical Day*, *i. e.* when a fortuitous change happen'd to the Diſeaſe accompany'd with Signs of a preceding Concoction and following Evacuations; as copious Sweats, Vomiting, Dejections or inſenſible Perſpiration (*b*). But, this

(*a*) Hipp. 10. Coac. 1.

(*b*) Aph. 58. §. 4.

this *Aphorism* seems to have respect to some kind of *Fever* peculiar to the *Grecians*, or Inhabitants of those hotter Countries, according to the Learned Doctor *Lister*'s Remark upon it. But,

'Tis more plain, that *Shivering*, succeeded by little or no *Heat*, must, as was formerly observ'd, be accompany'd with very bad Consequences: For it signifies great plenty of gross and obstinate Humors impacted in the Capillary Arteries, an Obstruction of the Glandules, and an insuperable *Lentor* of the Blood. And if a *Coma* happens upon *Horrors* on a *Critical Day*, or invades without being accompany'd with laudible Evacuations, especially in *continual Fevers*, and when the Strength of the Patient is weaken'd and spent; Death is inevitable (*a*). 'Tis likewise obvious and plain, how *omenous* it must be, when *Horrors* come frequently, not only in the beginning, but also in the progress of *acute Fevers*, and those called *malignant*, without any order or determin'd time, and often in the space of one day; this being a certain Sign of an Inequality in the Blood, *i. e.* that 'tis partly viscous, and partly too liquid, thin and dissolv'd; so that when that which is viscous is impacted in the *Arteries*, there can be no regular *Circulation* or *Heat*, but instead of it, *Cold*, *Horrors*, and *Shivering*.

(*a*) Aph. 46. §. 4.

Lastly, every one knows how dangerous it is to be taken with *Horrors* after *Sweating* (*b*). For, as we have seen, those *Sweats* that do not mitigate the Disease must be unprofitable and bad; so they must necessarily be more dange-

(*b*) Aph. 4. §. 7.

dangerous, when succeeded by *Cold* and *Shivering*: For it tells us, that the more refin'd *Serum* only, like that evacuated by insensible Perspiration, has been filtrated through the cutaneous Glands, whilst the more viscous Humors have been lodg'd in them, or retain'd in the Blood. Add to this, that frequent *Horrors* in the *Loins*, with a succeeding *Heat*, presages a great *Suppression* of *Urine*, and thereafter to *sweat* has been observ'd to be most dangerous *(a)*. But now shortly as to *Tremors* and *Palpitations*.

(a) 1 Coac. Aph. 8.

A *VOLUNTARY TREMOR* is nothing but a successive and frequent agitation to opposite Parts, as in shaking of the Hand, the *Antagonist* Muscles are successively and quickly contracted: But 'tis an *involuntary Tremor* that now falls under consideration, namely, such as are daily observable in those who are extreamly extenuated by Want, Old Age, Sickness, hard Labour, and the like; and therefore are unable to sustain any tolerable Weight without *Trembling* and *Shaking*. Now 'tis plain that this cannot be justly ascribed to any other Cause than to a want and defect of the Nervous and Spirituous Juice, which should be communicated by the Nerves: For this *Tremor* in some cases is quickly taken off, and the Weakness repair'd on a sudden by Food, spirituous Liquors and Cordials, so that one is enabled to exert a greater Power than formerly he was able to do, the *Coagulum* brought upon the Spirits being taken off, and the Orifices of the Nervous *Tubes* and Passages deobstructed.

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This Distemper neither depends upon, or can be restrained at our will and pleasure, notwithstanding our most earnest Endeavours. Thus in *Tremors* of the *Head*, which in *Apoplexies*, *Lethargies*, and such like Diseases, seem to be owing to an unusual Weight, or compressive Faculty, not to mention the more immediate Causes, we endeavour as much as we can to keep our *Heads* streight and upright, and therefore we contract the *Musculos Rectores*; but these being *relaxed* through a defect and want of Spirits, the *Head* falls down again, and is successively lifted up. This successive Motion of *Contraction* and *Relaxation* of the Muscles, is that we call a *Tremor* of the *Head*, which likewise happen to other Parts destitute of a proper Support, such as are the Hands and Arms, *&c.* And the *Tremors* and Concussions of the Body in time of *Sleep*, is owing to an uncertain, disordered and unequal *Flux* of the Spirits into this or that Muscle.

But of all *Tremors*, those in *Paralytick* Distempers deserve the greatest consideration, whether they be owing to a *Privation* of *Sense* or *Motion*, or both, proceeding from too great Humidity or Driness of the Parts, Cold, Heat or Compression, *&c.* and affecting the Nerves either *idiopathically* or *sympathically*. For, when the *Tremor* is chang'd into an universal *Concussion* and *Succussion* of the Body, the Distemper is irreparable and mortal; because in this case, all the Parts of the Nerves, the Brain, Arteries, Fibres and Spinal Marrow, are expos'd to be pulled asunder,

aſunder Diſſolv'd, Relax'd and Gangren'd. But, a *Tremor* coming upon this Diſtemper, is one of the beſt Signs of Recovery. For, as in coming before the *Palſy*, it ſignified an obſtruction of the *Orifices* of the Nerves, and beginning of the *Palſy*: So likewiſe when it ſucceeds or comes after it, it *Preſages* a happy Recovery; eſpecially, when accompanied with *Heat* in the parts affected, for in this Caſe, the Nerves are not totally obſtructed.

PALPITATIONS of the HEART come under the ſame Rules of Conſideration with that of *Tremors*: Tho' this Diſtemper be variouſly defined, and by ſome diſtinguiſhed from *Tremors*, as others will have it to be nothing elſe. Yet, 'tis as plain as certain, that it muſt be a violent concuſſive Motion of the *Heart*, obvious to our Senſes, and accompanied with an Alteration of the *Pulſe*: Becauſe, the *Pulſe* muſt always agree with the Motions and *Contractions* of the *Heart*. For which Reaſon, *Palpitations* of it cannot be a *Tremor*: Chiefly, becauſe as was formerly obſerved, the *Pulſe* may be *ſlow*, whilſt the *Contractions* and Motions of the *Heart* are moſt *frequent* and quick; namely, when the quantity and ſharpneſs of the Humors is ſo great, that they influence the *Fibres* of the *Heart*, before the Blood is derived into its *Auricles*, or has ſufficiently filled them. And therefore this violent *Concuſſion* or *Palpitation* of the *Heart*, ſeems rather to be owing to a *Stimulus* of it, or ſome

other cause accumulating or sharpening the Spirits, and inflaming the Blood, or that it proceeds from the Causes above mentioned, in accounting for an *intermitting Pulse.*

But be it as it will, the *Systole* and *Diastole* of the *Heart* in its *Palpitations*, has sometimes been so much disordered, and the Concussion so great and violent, that, as *Fernelius* has observed (*a*) it has broke the Ribs, disjointed the Bones of the Breast, and dilated the ascending *Trunk* of the *Aorta*, to the bigness of ones Fist, whereby the *Pulse* has been made most *Perceptible*, which, has given occasion, at least to a Conjecture, that, *Palpitations* for most part if not altogether, proceed from some Impediment about the *Heart.* Especially, after it has been frequently observed in dissecting the Corps of those who die of this Illness, that Polypus's, Anurisma's, Ossification, great clots of Blood, Tartarous Matter, Worms, Tumors, Stones, and such like, have been found in the *Heart*, or neighbouring Parts. In which Cases, the Patients have been affected, not by *Intervals*, but for most part *continually.* But, if they are produc'd by Acrimony and irritation of a Fluid Matter, Vapor or *Flatus*, as the Antients term'd it, they affect the Patient by Intervals, and the *Face* retains its natural Colour.

(*a*) De par. morb. cap. 12. lib. 5.

But, whatever be the Nature of *Palpitations*, whether *Idiopathical* or *Sympathetical*, from whatever Cause, or in whatever Disease *Acute* or *Chronical*, they are always Suspected and Dangerous, because they often

ten terminate in *Syncopes* and fainting Fits, to which, if one is often Subject, without a manifeſt Cauſe, at laſt may be taken off by a ſudden Death (*a*). And, it hath been obſerved that they are ſeldom long liv'd who are obnoxious to them; eſpecially, if they happen very early, and in the Flower of ones Age, or cauſed by a *Tumor*, or Swelling in the Heart. For, in this caſe, *Palpitations* are incurable: But, thoſe which are commonly a Symptom of *Hyſterick Fits*, go off with the cure of that Diſtemper.

(*a*) Aph. 41. § 2.

CHAP. XV.

Of Prognosticks *taken from* Impostumes, Buboes *and* Carbuncles.

ONE of the great Effects of the *Circulation* and impetuous Motion of the *Blood*, is to purge it self, and to throw off its *Heterogeneous* and *Foreign* Particles, by the common Emunctories, and ways of Excretion above-mentioned. But some Humors are so Viscous and Tenacious, that they are not easily separated or attenuated, to be cast out, either by *Urine*, *Sweat*, or other ways, and therefore, are either lodg'd in the Blood, or if separated from it, reach no further than the cutaneous Glands, where they are form'd into *Abscesses*, *Impostbumes*, *Spots*, *Pustles*, &c.

That these *Appearances* have their rise from an obstruction in the Circulation and course of the Humors in their Chanels; especially, in the Capillary Vessels, is plain and readily conceivable. And that when this happens only in the Blood, it occasions Inflamations, Contusions, St. *Anthony*'s Fire or Blights, and the like: As an obstruction of the *Lymph*, gives rise to general and particular *Dropsies*, &c. When the morbifick Matter is congested by degrees, it causeth *Abscesses* and *Critical Tumors*, which are owing to

to groſs Particles or febrile Matter, which cannot be eaſily attenuated by the *Impetus* of the circulating Blood, but is readily congeſted obſtructed and embaraſſed; whilſt the Blood and *Lymph* continnue their courſe.

And, 'tis no leſs plain, that this Obſtruction in the *Circulation* of the *Blood* and *Humors*, is partly occaſion'd by the ſtraitneſs and narrowneſs of the *Tubes* and Veſſels; Eſpecially, thoſe that are *Capillary*, thro' which the Humors cannot paſs by reaſon of their groſs and viſcous Parts; Or, the Mouths of the Veſſels are ſtraitned by *Compreſſion*, which neceſſarily obſtructs the mucilaginous Matter, thickned by Stagnation or ſome powerful acid. Or, Laſtly, this Obſtruction may be owing to a *contraction* of the *Fibres*. Now the Viſcidity of Humors being owing to crude and indigeſted *Chyle*, not perfectly attenuated and refined, neither in the *Stomach*, *Arteries*, *Lungs*, or by following Concoctions, are eaſily united, and congeſted; and tho' they may be ſeparated from the greater Chanels, by the *impetus* of the *Circulation*, and derived into the *Pores* of Excretion, yet they go no further, but terminate in *Critical Abſceſſes*.

For, when groſs and lent Humors *Ferment* (to retain that known Word) in any place of the Body, they muſt neceſſarily become the more fluxible, and diſpos'd to be *ouz'd* upon the *Skin*, which, likewiſe may happen without *Fermentation*; namely, when ſome of the more refined and liquid Parts, if there be any ſuch, are *ouz'd* and derived into the

Fibres of the *Skin*; or between the *Skin* and *Skarf-Skin*, whose *Texture* is adapted to admit and perspire the more refined and liquid Matter, whilst that which is more solid, gross and fix'd are retained and stagnate in it. And, if its quantity is but small and inconsiderable, a *Tumor* is not forthwith raised, but instead of it, *Spots* and *Exanthemata*; especially, if the Morbifick Matter consists of hot and inflamable Particles. But, when its Parts are solid and fix'd, unmix'd with Liquid and thin ones, and comes to be *fermented*, but cannot be perspired, they must be congested amongst the *distracted* and *distended* Fibres, spread and extended, and raised into *Tumors*, *Spots* or *Pustles*, variously coloured, according to the *Colour* of the Matter, and Degrees of its *Fermentation*, and *Impetus* of the Blood. Hence are the livid, black, reddish, greenish *Colours*, and different *Sizes* of Tumors, Spots, Pustles, *&c.*

But, here 'tis observable, that, if the Morbifick Matter is quickly *fermented* and dissolved, 'tis forthwith derived into the Glandules and Pores of the Skin, but is not congested there, being carried off by *insensible Perspiration*. Thus, the *Small-Pox*, for Example, come to Suppuration, while the *Measles* are never suppurated, but discussed by *Perspiration*. And, according to the Degrees of Perspirability of the Matter, either *Tumors*, *Pustles* or *Spots*, are raised upon this or t'other part of the Body: Which *Distempers* of the *Skin*, and their *Prognosticks*, have been no less diligently observed by the Anti-

ent

ent Phyſicians, than thoſe that are *internal*. And, the Sagacious *Hippocrates*, has even given us the Signs of their approach. Thus, *ſays he*, Thoſe who are a long time afflicted with *Fevers*, are affected with *Tubercles* or *Swellings* in their Joints (*a*). And thoſe who a long time, void thin and crude *Urine*, if they live are troubled with *Abſceſſes* below the *Diaphragma*. And, where-ever one is pain'd in recovering out of Sickneſs, will have an *Abſceſs* in that place (*b*). And alſo, thoſe who in a *Fever*, feel a *wearineſs* in their Joints, eſpecially about the Jaw bones (*c*). And again, thoſe whoſe *Urine* is ſuppreſſed with a *Shivering* and *Horror*, and ſeized with a ſleepy Drouſineſs, will be ſure to be affected with an *Abſceſs* in the *Parotides* or Almonds of the Ear.

(*a*) Aph. 44. § 4.

(*b*) Aph. 32. ibid.

(*c*) Aph. 31. ibid.

Now, thoſe *Abſceſſes* or *Impoſthumes*, accompanied with other laudable Signs of Concoction, and break out in thoſe Parts which are at the greateſt Diſtance from the *Viſcera*, that come to a ſuppuration and mitigate the Diſeaſe, are ſoft, full, riſe to a Point, and ripen equally; are rediſh, yellowiſh and whitiſh Coloured, of an indifferent or moderate Largeneſs and Number, nouriſhed and ſupporated in a little time, are juſtly eſteemed to be *Salutary*. For *Abſceſſes* accompanied with thoſe Conditions and Circumſtances, and breaking out upon the Almonds of the Ears and Legs, give a Solution to ſeveral Diſtempers; eſpecially, thoſe that are *Pulmonary*. For,

The groſs and viſcous Humors, the productive

ductive cause of the Inflamation, being rendred Fluxible and separated in the most proper place, the Inflamation must necessarily be mitigated and taken off, and the Patient recovers. So it happens when those Humors fall upon the *Legs*, or extream Parts where the Pressure and *Impetus* of the Blood is weakest, and therefore the more disposed to be congested. Thus also in an *Empyema*, the *Pus* and corrupted Matter sometimes pierces the Membranes, and reaches to the very *Skin*, where 'tis congested either in a great quantity, or in smaller Risings and Pustles, here and there over the Body.

By what hath been said of *Abscesses* that are *Salutary*, those which are not such may readily be distinguished. Thus, when they break out unseasonably, as it happens in *Malignant* and *Pestilential Fevers*, and come not to Suppuration; but recoil upon the Blood, and disappear without any apparent Reason, *i. e.* natural Evacuations, or the Administration of Medicines. Or, when they are too dark, red, livid, and blackish coloured, which, even in the *Measles* is a pernicious Sign. Thus likewise, in the just mentioned *Fevers*, when a *Bubo* comes out well at first, with an abatement of the Symptoms, and afterwards Disappears, and instead of it, *Purple Spots*, 'tis a certain Sign of Death. This recoiling of the Morbifick Matter is sometimes occasioned by *artificial* and *forced Sweats*; which, tho' designed to further the Eruption of the *Bubo*, diffuses and dissipates it all over the Body, which should have promoted

moted the Suppuration. Or, the Morbifick Matter being ſubſtracted, they either ſoon ſtrike in, or at leaſt, never come to a true *Abſceſs*. The ſame happens to thoſe in the *Small pox*, when *Sweat* has been violently raiſed; eſpecially at the beginning of that Diſeaſe. So that thoſe *fatal Events*, ſometimes proceed rather from the ill Management of the Cure, than from any venomous Diſpoſition, or *Malignancy*, as 'tis called, of the Diſeaſe.

Of the nature of *Abſceſſes* and *Buboes*, and yet more *malign*, are *Carbuncles*; which break out in *Peſtilential Fevers*, being of a ſalt, ſharp, and almoſt a Cauſtick Nature, the Matter of which is precipitated as 'twere, and detach'd from the Blood in the Ebulition and Fervency of the *Fever*, and fixing it ſelf in the Cutaneous Glands; where, by its Corroſive Sharpneſs, it cauſeth a painful *Heat*, *Mortification*, and at laſt a *blackiſh Colour*. In *Malignant Fevers*, they firſt reſemble a ſmall whitiſh or livid Bliſter or Pimple, extreamly painful and *Hot*, and in a little time comes to be an *Ulcer*, covered with a *Cruſt*, like that raiſed upon the Skin by a hot Iron. Sometimes, they begin with this *Cruſt*, without any Bliſter, only the *Ulcer* is hid under it, and then diſcovered when the *Cruſt* is fallen off, eating and corroding the adjacent Parts. The Iſſue and Prognoſticks of thoſe *Carbuncles*, is too well known; and likewiſe that of *Ulcers* in ones *Leg*, when they dry up, and are followed with a Pain in the Breaſt and ſide oppoſite to the affected *Leg*; for,

the

the Sign is Mortal. *Hipp. de morb. prop.*

And, generally speaking, the Spots and Eruptions of Humors towards the Skin, the later they appear and nearer to the *Status*, or height of the Distemper, so much the better: For, then the Disease tends to a *Crisis* and Concoction. But, in *Malignant Fevers* the sooner the *Buboes* break out, 'tis the better for the Patient. For, in this case, the internal parts are kept clear of the Contagion. And, if the swelling of the *Parotides* appear *Symptomatically*, that is, at a time, when the Symptoms are still high, and the Disease rather inflamed than abated, it always portends Death; But, when it comes *Critically*, 'tis a good Sign, as was just now observ'd.

The Inflamation happening in the Faces and other Parts of those, taken with *Erysipelatose Fevers*, *Blights* or St. *Anthony's Fire*, has been thought to proceed from the thinner part of the Blood, expelled to the outward Parts, causing broad red Spots, by which the *Fever* is taken off. But, more probably, these *Phænomena* seem to be owing to a subtil and volatil Acid, mixed with the volatile Salt of the Blood, by which 'tis coagulated in the Cutaneous Vessels. For, we may observe, that, this Distemper commonly happens upon the Nervous and Sanguine Parts. And, 'tis remarkable, that, when its cure is ill managed, the place is soon gangreen'd, spreads and extends it self upon the adjacent Parts, especially when it happens upon the *Face*.

CHAP.

CHAP. XVI.

Of Criſis's and Critical Days.

EVery Body knows how religiouſly, *Critical Days* were obſerved by the Antient Phyſicians. But, later Ages has wipt off the Duſt of antiquity, diſcover'd its Infirmities, and inriched the Art of *Phyſick* with cloſer Obſervations and Diſcoveries; by deriding Conjectures, and uncertain *Theories* and Opinions, Torturing *Nature*, and examining her Productions by her own Laws, checking her irregular Motions, and preventing the Extinction of the Vital Heat; eſpecially, when aſſail'd by the ſtubborn and unmanageable Diſtempers and Diſorders of *Fevers*, which if not obſtructed, run out their Courſe; ſome ſooner, ſome later, but always accompanied with an uncertain Event and Iſſue; which gave Birth to the odd and even *Critical Days*, aſſigned by the Antients for their *Period*.

It muſt indeed be granted, That, an animate Body, being a Complexion of Animal and Natural Actions, depending upon certain Principles, ſubject to the Laws of Nature; when theſe Principles come thro' Violence or foreign Impreſſions, or the uſe of the *Six Non-naturals*, to depart from their Natural State; what Motions they make to retrieve their Primitive State will be ſuch as are regulate

gulate by Nature. Thus, in Diseases, especially, those that are *Acute*, there is a certain Standard of Increase and Declension, which comes either to a *Spontaneous* Solution by Chance, or thro' the Favour of Nature, or, terminates in Death. This is the *Crisis* of a Disease, on which the Antient Physicians laid so much stress, and in Feverish Distempers pretended to nominate the Day on which it should happen.

Neither is it to be doubted, that, some Diseases are more constant and regular in their Motions than others; and come to their Period, some in the space of a few days, and others in so many Weeks, *&c.* For, the Concoction of the Morbifick Matter and Humors, is nothing else than a Change and Alteration in them, to a certain Subtilty and Fineness; that they may be carried by the Force and impulsive Motion of the circulating Blood through the Chanels of Excretion; namely, the subcutaneous, Intestinal and Salivary Glands, and those of the Kidneys. But, if the Glutenous and Viscid Humors, cannot be altered and concocted to a Perfection proportional to the Orifices of the excretory Vessels; they must either stagnate in the capillary Vessels, or be thrown by the same Power of the Blood, at least into the Cutaneous Glands; and being retained there, are either form'd into *Abscesses*, or taken off by some *Hemorrhage*; for the accomplishment of which, a certain space of time must be absolutely necessary.

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In this reſpect then, it muſt be granted, that there are *Criſiſes* and *Critical Days*, but not fixed to a certain and determinate Number, the Moon's Motion, or that of any other Conſtellation, and thoſe only are *Critical*, in which the Morbifick Matter is brought to perfect Maturity, ſo to term it. And *that* very day, on which it comes to its laſt Degree of Perfection, to be ſeparated and taken off, is properly *Critical*. For, as the Planets accompliſh their Revolutions, ſome ſooner, and others later according to their *Orbits*. So, the different Humors in a Human Body, before they come to the laſt Degree of Maturation or Concoction, require more or leſs time, according to the Degrees of their Fluxibility; and therefore the *Criſiſes* muſt happen at different times. And, ſuch Humors as can be duly concocted on our third day, may *then* conſtitute a *Criſis*, not that there is any Vertue in a *Ternary* Number; But, that ſuch a ſpace of time is ſpent or is neceſſary, for acquiring a due Maturity and Deſpumation. Beſides, a natural Day with us conſiſting of twenty four Hours and ſuppoſing there be ſome Nations whoſe Days are but Eighteen, the Humors which require Seventy two Hours for their Perfect Maturity, ſhould happen to be *critically* diſcuſſed upon the Fourth, and not upon every third Day. So that in a Parallel Sphere, the time is not to be meaſured by days but by Hours, without which, the myſterious Syſtem of *Ternary*, *Septenary*, and ſuch days, muſt be built upon a ſinking Foundation.

But,

But, tho' the *Grecian Physicians*, by long and close Observations, might have known in what time, or on which day after the first Invasion of a *Fever*, the Morbifick Matter should be perfectly concocted, changed, altered, and brought to a *Crisis*; Yet, the uncertainty of their Observations, if applied to the Climate of other Countries, is very Notorious. And, it would be next to a Miracle, if the same days which were *Critical* to them, should be so with us, not only by reason of the *Difference* of *Heat*, but likewise of the Constitution and texture of the Blood. Besides,

Every one may observe, that, the diversity of Countries, makes no small Difference in the Temper and Manners of the Inhabitants, with reference to Timorousness and Courage, Pleasure and Pain, and other Dispositions of the *Mind*. And, perhaps it may come to pass, from this diversity of Climates and ways of living, that, some of the *Aphorisms* and excellent Observations of *Hippocrates* are not always verified, but prove doubtful upon the Experiment. Again, the *Grecian Air* is remarkably purer and finer than ours, and therefore the *Crisises* of acute Distempers might have been more regular and perfect, whereas our *Air* is often defil'd with watry and gross Impurities, which mixing with, and tainting the Humors; 'tis no wonder, they do not reach a due *Crisis*, and far less at the time prefix'd by the *Grecians*.

But, the nicest and most diligent observers of the *Hippocratical Days*, whether *perfectly Cri-*

Critical, *Principal* and *Radical* (ſo called) as the Third, Seventh, Fourteenth, Twentieth, and ſo on to a Hundred or more, if that will not do, are often miſtaken in their *Prognoſticks*, when they come to *Computation*. Some commencing from the firſt Day the Patient was taken Ill; others when he was confined to his Bed: And, if neither hit right, the Calculation muſt according to the *Grecian Mode*, Commence before or after, and yet after all, find not their Account; eſpecially, in thoſe called *Imperfectly Critical*, *Judicatory*, *Interceding*, *Medicinal* and *extraordinary Critical Days*. And, altho' ſeveral Nations have made their peculiar Obſervations concerning the *Criſis's* of *Fevers*; yet, the uncertainty always remains; and it muſt be own'd, that, the laſt and moſt perfect Coction of the Febrile Matter and Excretion of it, cannot be fixed to a limited and certain time. Beſides, a *Criſis* being as we have ſeen, a ſudden change in the Diſeaſe, terminating either in Death or Recovery, entirely depends upon the Method of Cure, which, either haſtens or prolongs it. For, this conſiſting in General Evacuations ſeaſonably procur'd, the Crudities and Humors occaſioning the *Fever*, are ſooner brought to Concoction and thrown out, than naturally they would have been.

Nature, (by which I have all along underſtood the Effects of Matter and Motion according to the Laws and Conſtitution of *Animal Oeconomy*) is indeed the great Phyſician and curer of Diſeaſes; ſo, that now a days

days ſeveral Diſtempers are happily taken off by the ſlighteſt Remedies, or, by a meer abſtinence from them. But, in *Acute Diſeaſes*, the Die is caſt for *Life* or *Death*; and in this Caſe, *Nature* is not to be altogether relied on, neither muſt we, as the Advocates for the Doctrine of *Criſis's* patiently wait for the *Iſſue* of the Conflict between Nature and the Diſeaſe; the Peccant Humors of ſome *Fevers*, being ſometimes ſo Tenacious, Stubborn, and Viſcid, that, *Art* muſt interpoſe, to promote its Evacuation ſome way or other: their Malignity too often diſpoſing the Blood to a fatal *Coagulation*, and haſtning Death by being permitted to lodge too long in its Chanels. And,

When the Blood is raging and fervent, and expoſed to *Diſſolution*, it muſt be controul'd, kept within its Bounds, and its Motions managed in ſpite of the Changes, Conjunctions and Oppoſitions of the Celeſtial Bodies, on which the *Critical* Motions and ſolemn Efforts of Nature, and the Rounds of Crudity, Ebulition and Deſpumation were thought to depend. And, in one Word, *Criſis's* of Diſeaſes vary in proportion to the various Methods of Cure, the Seaſon of the Year, Climate and Country, way of Living, Conſtitution and Age of the Patients.

CON.

CONCLUSION.

HAving thus conſider'd, and in ſome Meaſure accounted for the moſt remarkable and obvious *Appearances* of Diſtempers, and the *Prognoſticks* taken from them; It now remains for *Concluſion*, ſhortly to ſubjoin, that, as every Diſeaſe Terminates in Death or Recovery, and one dies, when the Morbifick Matter of his Diſtemper is ſo great, ſtubborn, and obſtinate, that it cannot be overcome or withſtood by the Force and Strength of his Fibres, nor by the briskneſs of his Blood and Spirits. So, on the other hand he is reſtored to his Health when *theſe* are not weakned, diſſolv'd, relax'd, and impoveriſhed in a certain and limited time, that is, when the Morbifick Matter exerts its greateſt Power, and comes with all its Force. For, *then* the Fibrous Parts, and the Blood and Spirits, quickly acquire Strength and recover their *Elaſticity*, the Diſeaſe goes off gradually, and the Patient is reſtored to his former Health. But, foraſmuch as the Strength of a Diſeaſe, and the *Time* in which it makes the greateſt ſhock, is beſt known by Experience, if therefore we are ſo happy as to know this *Critical Minute*, and have obſerved, that the Patient has eſcap'd it, then may we with Confidence and Aſſurance *Prognoſticate* a happy Recovery.

This is the Judgment and Comparison, which, in the *Prognostick Art*, ought to be made between the Strength of the Disease, and that of the Patient. Which, nevertheless upon the Experiment, is found to be attended with Defects and Fallacies, chiefly, by reason of the various Cases, Latent Circumstances of the Disease, and difficulty of commensurating the Strength of the Patient. For, in some Distempers most of the *Signs* of their own Nature are so dark, obscure, and fortuitous with respect to the issue of them, that 'tis no easy Matter to have any Foreknowledge of them. When therefore, we want the *Signs*, which are proper to point at the State of the Sick, 'tis no wonder our *Prognosticks* be fallacious and uncertain.

Thus, some die before they be affected with any apparent Disease, and we are surprized with it before we could *Presage* the unhappy *Event*. We are not much affraid of any fatal Consequencs from a Tertian *intermitting Fever*, and yet sometimes 'tis changed into that which is *continual*, and becomes Mortal. And, those which appear to be genuine Tertians act the same Tragedy in a Fit, and the Patient breaths out his last in the presence of his Physician. Again, in *Malignant Distempers*, we see some escape, and some carried off under the same *Symptoms* and *Appearances* promiscous to both, as vomitting, Stools, Hemorrhages, Sweats, Spots, *&c.* chiefly, because those Excretions have not been owing to the same Cause, that is, they have been *Critical* to the one, and *Symptomatical*

matical to the other. And, to diſtinguiſh them is no eaſy Matter; And therefore we muſt be contented with the moſt probable Conjectures, and account for the Cauſes of ſuch *Phænomena* by their Effects.

For, we do not always and ſeaſonably diſcover the Malignancy of the Diſtemper: being often impoſed on by its flattering *Symptoms*, which are often few and gentle; and yet dangerous. Hence it is, that, the unwary Phyſician buoys up his Patient with the Hopes and Aſſurances of Recovery, until a heavier *Symptom* appears that carries him off. Thus alſo, one that's ſubject to habitual Pains in the Head, is commonly taken with a mild *Continual Fever*, which, not being accompanied with grievous *Symptoms*, may incline the *Phyſician* to hope well of his Patient, not knowing, that the *Fever* is owing to the Old Latent Infirmity and Diſtemper, which, notwithſtanding being inflamed and heightned by the Fever, throws him into *Watchings*, a *Delirium* and Mortal *Convulſions*.

Once more, (for *Prognoſticks* taken from the *Pulſe* and *Urine*, has already been conſidered with the ſame deſign as here, to render us the more Cautious and Circumſpect in our Judgments concerning them) a Rupture of an *Abſceſs* in the Breaſt, Meſentery or Liver, inſenſibly ripen'd, is not eaſily preſaged, and the time of its breaking determined; chiefly becauſe neither is the quantity of collected Matter, nor Reſiſtance or *Momentum* of the Solid Parts, to withſtand

the Congestion, always the same, nor is there always the same Degree of *Heat* to bring the matter to Maturity. Besides, that external Applications, Cold, Coughs, and a thousand such like Chances, may either procrastinate or hasten the Rupture, the Manner and Event of which is no less uncertain, because we know not whether a *Vomica Pulmon.* v. g. shall fall into the Cavity of the *Breast*, or incline to the *Trachea*, and, if there be one in the Liver or Mesentery; whether it shall break upon the Stomach, or Intestins, or fall into the Cavity of the *Abdomen*.

Moreover, 'tis observable, that the Epidemick Constitution of the *Air*, likewise contributes, to render the *Event* of Diseases to be uncertain, and the *Predictions* made concerning them, precarious. Thus, many die of the *Small-Pox* and *Measles*, after the nicest Care and Regimen, notwithstanding they seem to be gentle and easily cured. And, some have observed, that, one *Time* is more propitious than another to big Bellied Women, many of them being easily delivered in *This*, and in the *next* Month with Difficulty. But, however it be, 'tis plain that the Climate and Constitution of Places, renders some Diseases more or less obstinate and dangerous. Thus, a hot Season is most dangerous in the *Small-Pox*, whilst *Feverish* Distempers are oftner then taken off, than in a colder one. And, in Watery, Marshy, and moist Places, *Scorbutick* People are more difficulty cured, and oftener die of

grievous

grievous *Symptoms*, than thoſe who live in a more ſerene and clear *Air*.

Now, for theſe and many other Reaſons that might be adduc'd, I think 'tis plain, how prudently and cautiouſly, a Phyſician ought to inſtitute his *Prognoſticks*; and how pertinent to this Purpoſe the Sage *Hyppocrates* his Advice is, *Ob hæc ergo non tutum eſt prædicere, priuſquam ad ſtatum perveniat morbus, verum ab hoc tempore, quicquid præter rationem acciderit, dicere oportet* (*a*). And, *Conſulo autem ut quam prudentiſſime agant, tum in reliqua Arte, tum in hujuſmodi prædictionibus, illius probe memores, quod ſi cui ſucceſſerit prædictio, is apud ægrum Prudentem in admiratione fuerit: ſi vero quis aberrarit, præterquam quod odio habetur, fortaſſe, etiam inſaniſſe videbitur* (*b*) For, ſome *Signs* being only probable, and theſe too being often changed and altered by very ſlight and ſometimes hardly obſervable Circumſtances, *Prognoſticks* concerning them, are to be made with all poſſible *Caution*, eſpecially, in acute Diſtempers, which, ſometimes expoſes the *Phyſician* to no ſmall Reproach and Contempt, when his *Auguries* happen to be Falſe and Precarious.

(*a*) Porrhe. lib. 2.

(*b*) Ibid.

A Prudent and Wary Phyſician therefore will be moderate and ambiguous in his *Promiſes*, and reſerv'd in his *Prognoſticks*, unleſs founded upon certain and infallible Signs. Some there are, whoſe Avarice prompts them to foretel the worſt, pretending thereby, to render the Patient the more obſequious, and to be treated with the greater

greater Care, that the greater Honour and Advantage may redound to them upon *Recovery*, and less Reproach from an *unhappy Event* that was foreseen and presaged. But, I cannot be perswaded, that *Recovery* brings any Honour to the *Physician* who predicted *Death* to his Patient, or told him that his Distemper would continue long, which ends in a short time. For, as neither the Love of Mony or Popular Fame, should tempt one to say that which is not true; so, the Sick and Attendants may be disposed to be obsequious, by the severer *Admonitions*, founded upon the Danger that may insue, upon the neglect of *Diet* and *Medicines*. And, on the other Hand, when the *Physician* gives hopes of *Recovery*, and *Death* follows, the Reproach cast upon him, is less regarded, because, Mistakes will happen, or the Disease is changed into another that could not be foreseen, and accompanied with new and more dangerous *Symptoms*. Besides, the change from *Health* to *Death* happens oftener, than from *Death* to *Health* and *Recovery*.

Neither doth a prudent *Physician* give positive Assurances of ones Recovery; For, 'tis God alone that preserves our Life, and prolongs our Days. And, the soundest and strongest of us not being sure of to Morrow, much less is one that's Sick. But, when he foresees inevitable and certain Death, his Prudence will incline him to give timely Notice of the Danger. Some indeed, think it more proper to comfort the dying Patient with

with the hopes of *Recovery*, lest the terrible Account of his being past Remedy, should hasten his *Death*. But, every one knows, that this is to be done with all imaginable Caution and Prudence; namely, not to tell him that he must *die*, but that his State and Condition is *Dangerous* and *Doubtful*. For, Monstrous and surprising Accidents very often happen in Art as well as Nature. Thus, one *Physician* despairing of his Patients *Recovery*, takes his farewel, another is called, and the Sick *Recovers*, so that, *One Sows, and another Reaps*. And, sometimes the Sick is so much startled upon the terrible Sentence of his morose *Physician*, that he is more ready to follow the Advice of the next, and to throw Reproaches upon him who added Affliction of the *Mind* to that of the *Body*, and threw him that was Miserable, into Despair.

'Tis therefore more proper, to communicate, but with a Serene Countenance and Air of Good Hope, the imminent Danger and Hazard to some near Relation or Attendant, who, in a proper way will admonish the Sick of his State and Condition. Nay, it may be more directly insinuated to such Patients who are indowed with a presence of *Mind* and *Spirit*; whereas, the worst is to be always concealed from those that are Young and Timerous. 'Tis true indeed, that, they are but few that are blessed with such a Composure of *Mind*, who are not damped and sunk, upon the account they have of certain and inevitable *Death*. But, some there are, especi-

especially, those who have been long afflicted with grievous and painful Distempers; and in *Death* promise to themselves an end of all their *Miseries*. Hence it is, that some wish for it, and are solicitous concerning their State and Condition, that they may the more conveniently dispose of their worldly Concerns; and in such Cases to be reserved or doubtful, seems to be unaccountable. But nevertheless, the dying Patient is always to be comforted, the use of Remedies continued, and administred, especially, such as are mildest and most easy, which, upon many Accounts at this time are the safest.

F I N I S.